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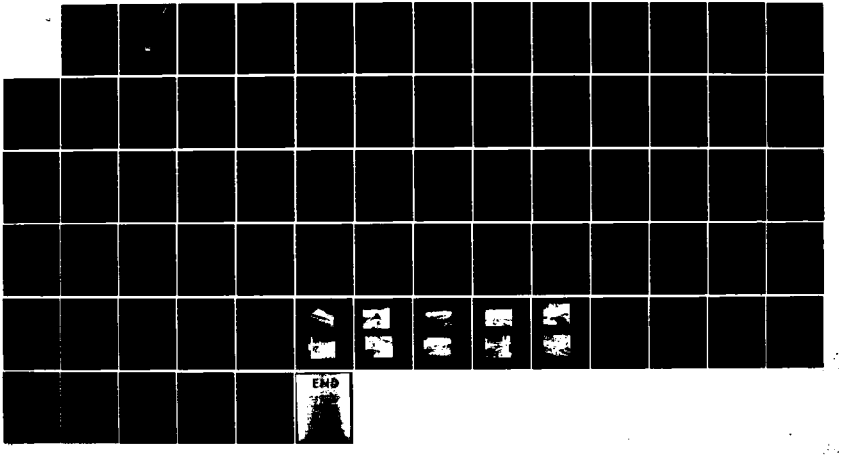

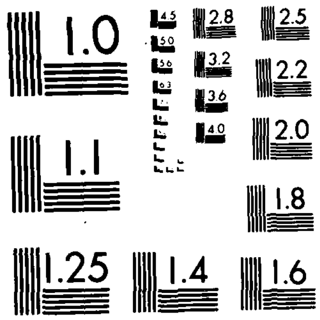

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CONNECTICUT RIVER BASIN

VERNON & BOLTON, CONNECTICUT

RISLEY RESERVOIR DAM

CT. 00211

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

NOVEMBER 1978

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CT 00211	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Risley Reservoir Dam NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEPT. OF THE ARMY, CORPS OF ENGINEERS NEW ENGLAND DIVISION, NEDED 424 TRAPELO ROAD, WALTHAM, MA. 02254		12. REPORT DATE November 1978 13. NUMBER OF PAGES 50
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,
Conn. River Basin
Vernon & Bolton, Conn.
Risley Reservoir Dam

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The dam is located on a tributary of the Conn. River on the town line of Bolton and Vernon, Tolland County, Conn. It is an earthfill structure approx. 625' long with a maximum depth at its center of 26'. The crest width varies from 12 to 15 ft. The dam is in generally good condition. It appears to be structurally stable at the present time under normal conditions. Based on its small size and high hazard classification in accordance with the Corps' guidelines, the test flood is ½ the PMF.

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDED-E

APR 16 1979

Honorable Ella T. Grasso
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor Grasso:

I am forwarding for your use a copy of the Risley Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. The report is based upon a visual inspection, a review of past performance, and a preliminary hydrological analysis. A brief assessment which emphasizes the inadequacy of the project spillway under test flood conditions is included at the beginning of the report.

The preliminary hydrologic analysis has indicated that the spillway capacity for the Risley Dam would likely be exceeded by floods greater than 44 percent of half of the Probable Maximum Flood (1/2 PMF), the test flood for spillway adequacy. Screening criteria for initial review of spillway adequacy specifies that this class of dam, having insufficient spillway capacity to discharge the test flood, should be adjudged as having a seriously inadequate spillway and the dam assessed as unsafe, non-emergency, until more detailed studies prove otherwise or corrective measures are completed.

The classification of "unsafe" applied to a dam because of a seriously inadequate spillway is not meant to indicate the same degree of emergency as would be associated with "unsafe" classification applied for a structural deficiency. It does mean, however, that based on an initial screening and preliminary computations there appears to be a serious deficiency in spillway capacity. This could render the dam unsafe in the event of a severe storm which would likely cause overtopping and possible failure of the dam, significantly increasing the hazard potential for loss of life downstream from the dam.

NEDED-E
Honorable Ella T. Grasso

It is recommended that within twelve months from the date of this report the owner of the dam engage the services of a professional or consulting engineer to determine by more sophisticated methods and procedures the magnitude of the spillway deficiency. Based on this determination, appropriate remedial mitigating measures should be designed and completed within 24 months of this date of notification. In the interim a detailed emergency operation plan and warning system should be promptly developed. During periods of unusually heavy preciptiation, round-the-clock surveillance should be provided.

I have approved the report and support the findings and recommendations described in Section 7, with qualifications as noted above. I request that you keep me informed of the actions taken to implement these recommendations since this follow-up is an important part of the non-Federal Dam Inspection Program.

A copy of this report has been forwarded to the Department of Environmental Protection, the cooperating agency for the State of Connecticut. This report has also been furnished to the owner of the project, Mr. John S. Risley, Lake Street, Vernon, Connecticut 06066.

Copies of this report will be made available to the public, upon request to this office, under the Freedom of Information Act, thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Protection for the cooperation extended in carrying out this program.

Sincerely yours,

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

RISLEY DAM

CT00211

CONNECTICUT RIVER BASIN
GREENFIELD, MASSACHUSETTS

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

Identification No.:	CT00211
Name of Dam:	Risley Dam and Reservoir
Town:	Bolton & Vernon town line
State Located:	Connecticut
County Located:	Tolland
Stream:	Lydall Brook
Date of Inspection:	15 December 1977

BRIEF ASSESSMENT

The dam is located on a tributary of the Connecticut River on the town line of Bolton and Vernon, Tolland County, Connecticut. It is an earthfill structure approximately 625' long with a maximum depth at its center of 26'. The crest width varies from 12 to 15 feet. A vertical granite masonry wall extends from the downstream side of the crest to the bed of Lydall Brook below. The visable part of the upstream embankment has a 1 on 2 to 1 on 3 slope with a riprap face. The downstream embankment consists of cobbles and boulders piled against the face of the masonry wall on an approximate 1 on 1.5 slope.

The dam is in generally good condition. It appears to be structurally stable at the present time under normal conditions. Based on its small size and high hazard classification in accordance with the Corps' guidelines, the test flood is 1/2 the PMF. The spillway will pass only about 44 percent of the test flood and is considered inadequate.

Recommendations to improve dam safety are:

1. Increase spillway capacity.
2. Replace 6" discharge pipe and relocate valve.
3. Add riprap near the center on the downstream side.
4. Divert spillway discharge away from the toe of the dam.

TEAM MEMBERS

William J. Farrell, Team Leader

James M. Aiken, Soils Engineer

Joseph A. Colucci, Structural Engineer

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This Phase I Inspection Report on Risley Dam has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.

Richard F. Doherty

RICHARD F. DOHERTY, MEMBER
Water Control Branch
Engineering Division

Joseph A. McElroy

JOSEPH A. MCELROY, MEMBER
Foundation & Materials Branch
Engineering Division

Carney M. Terzian

CARNEY M. TERZIAN, CHAIRMAN
Chief, Structural Section
Design Branch
Engineering Division

APPROVAL RECOMMENDED:

Joe B. Fryar

JOE B. FRYAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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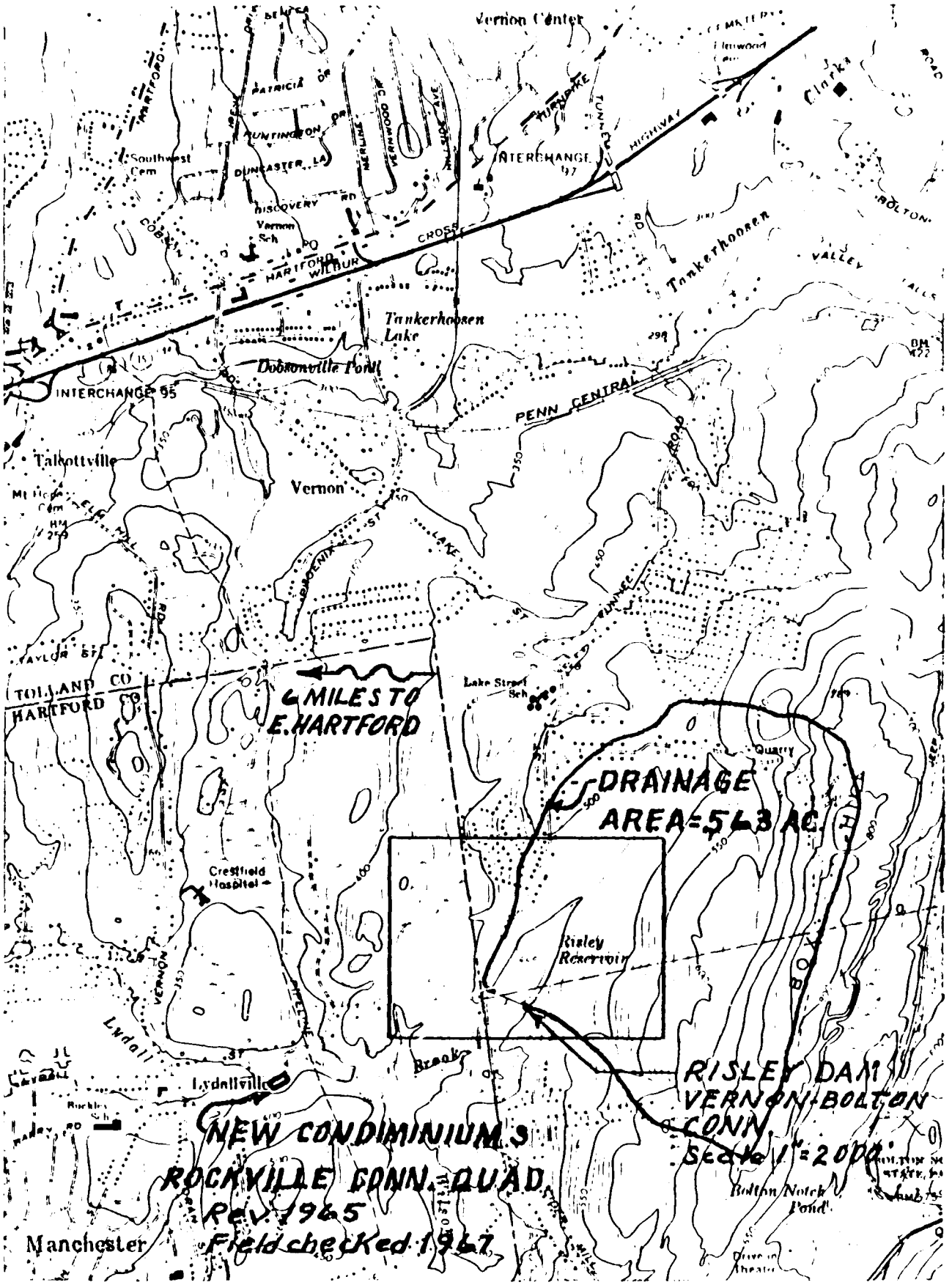


REGIONAL VICINITY MAP

PLATE 1

PHASE I INSPECTION REPORT

RISLEY DAM CT00211

SECTION 1

1. Project Information.

1.1 General.

a. Authority. Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region.

b. Purpose.

(1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.

(2) Encourage and assist the States to initiate quickly effective dam safety programs for non-Federal dams.

(3) To update. verify and complete the National Inventory of Dams.

1.2 Description of Project.

a. Location. The dam is located on a tributary of the Connecticut River on the town line of Bolton and Vernon, Tolland County, Connecticut. It can be located on a U.S.C.G. survey map at Latitude 41° -48'-00" and 72° -28' -20".

b. Description of Dam and Appurtenances. The dam is an earthfill structure approximately 625' long with a maximum depth at its center of 26'. The crest width varies from 12 to 15 feet (See photos Appendix C). A vertical granite masonry wall extends from the downstream side of the crest to the bed of Lydall Brook below (See photo #4 Appendix C). The visable part of the upstream embankment has a 1 on 2 to 1 on 3 slope with a riprap face (See photo #1 Appendix C). The downstream embankment consists of cobbles and boulders piled against the face of the masonry wall on an approximate 1 on 1.5 slope (See photos 1,7,8 Appendix C). A 6-inch outlet pipe runs through the dam and discharges in the vicinity of the downstream toe. The rock slope is steeper in the vicinity of this pipe discharge. The pipe is the only means of lowering the water level and is controlled with a 6-inch gate valve on its downstream end.

The concrete spillway (See photos 8,9, 10 Appendix C) is a broad crested weir with a trapezoidal cross section. It is 42 feet in length, 16 feet in width, with a 28 foot bottom and 1 on 5 side slopes. The crest of the spillway is about 2 feet below the crest elevation of the dam.

c. Size Classification. The Risley Dam with its maximum height of 26 feet and maximum storage capacity of 226 acre feet is classified in the small category.

d. Hazard Classification. Because of the existence of residences, a condominium complex and a church on the flood plain of Lydall Brook downstream of the dam, the structure has been placed in the high hazard classification.

e. Ownership. The dam is currently owned by Mr. John S. Risley of Lake St., Vernon, Ct. The Manchester Water Company has water rights to the reservoir.

f. Purpose of Dam. The dam was originally constructed for agricultural purposes. The Town of Manchester has water rights to the reservoir and uses it as a backup supply.

g. Design and Construction History. The dam was constructed in 1853. There are no known design or construction records available. Discussions with Mr. Risley and Water Department personnel indicated that the cobbles and boulders placed on the downstream side of the vertical masonry wall were put there in 1924 to add stability to the structure. Four test pits dug for the Henry Souther Engineering report on the dam in 1972 indicated material in the vicinity of the existing spillway to be silty gravel. These explorations were between 0.5 feet and 6.5 feet in depth. All but one uncovered bedrock. A copy of the Souther report is attached as Appendix B.

h. Normal Operating Procedure. The only operational procedure connected with this dam is the manual operation of the 6 inch gate valve to supplement water storage in the Manchester Water Department's downstream pools. The water surface in the reservoir depends on recent rainfall quantities and fire flow demands from the town. It is not uncommon, according to Water Department officials, to have the surface elevation well below spillway crest.

1.3 Pertinent Data. The only available data in addition to the Souther report and information gleaned from discussions with the owner and Manchester Water Department officials, were acquired through visual inspections by New England Division personnel and the use of U.S.G.S. topographic maps.

a. Drainage Area. The drainage area above the dam is approximately 563 acres (0.88 sq. mi.). There are two streams contributing to the reservoir which are part of the headwaters for Lydall Brook. The area consists of moderatly sloping forest land with a sparsely populated street running along the westerly side of the reservoir.

b. Discharge at Damsite. Discharge occurs at the spillway and through the 6 inch pipe under the dam. High rates of discharge are discussed in Section 5 - Hydraulics and Hydrologic Evaluation of Features.

(1) Outlet works (conduit) size 6" and Invert Elev. +425.

(2) Maximum known flood at damsite. Unknown.

(3) Total spillway capacity at maximum pool elevation 540 cfs @ 450+ elev.

c. Elevation (ft above MSL). The following elevations were estimated from a U.S.C.G.S. topographic map.

(1)	Top of Dam.	450.0 +
(2)	Test Flood	450.6
(3)	Full Flood Control pool	N/A
(4)	Recreation pool	N/A
(5)	Spillway crest (ungated)	448.0 +
(6)	Upstream pipe invert	Unknown
(7)	Downstream pipe invert	425.0 +
(8)	Streambed at center line of dam .	424.0 +
(9)	Maximum tailwater	424.0 +

d. Reservoir

(1)	Length of maximum pool	1800 feet
(2)	Length of recreation pool	N/A
(3)	Length of flood control pool . .	N/A

e. Storage (acre-feet)

(1)	Recreation pool	N/A
(2)	Flood control pool	N/A
(3)	Test flood storage	235 (gross)
(4)	Top of dam	226
(5)	Spillway crest storage	190

f. Reservoir Surface (acres)

(1)	Top of Dam	19.5
(2)	Maximum pool	19.5
(3)	Flood control pool.	N/A
(4)	Recreation pool	N/A
(5)	Spillway crest	14.7

g. Dam

(1)	Type	Earth-masonry
(2)	Length	625 feet
(3)	Height	26 feet
(4)	Top Width	+15 feet
(5)	Sides Slopes . .	U/S 1 on 2 or 3-D/S 1 on 1-1/2
(6)	Zoning	See Sections Plate 4
(7)	Impervious Core	Unknown
(8)	Cutoff	Unknown
(9)	Grout curtain	Unlikely

h. Spillway

(1)	Type	Concrete broadcrested trapazoidal weir
*(2)	Length of Spillway	42 feet
(3)	Crest length	28 feet
(4)	Crest elevation	448.0 ±
(5)	U/S Channel	None
(6)	D/S Channel	10% slope estimated
(7)	Height of abutments above crest	Sloping 1.5 feet above crest

i. Regulating Outlets. The only means of regulating flow from the reservoir is by operating the 6-inch gate valve on the downstream end of the 6-inch cast-iron pipe running under the dam.

(1)	Invert	± 425
(2)	Size	6
(3)	Control Mechanism	Gate valve
(4)	Maximum discharge capacity . . . . with water surface @ top of dam	4.5 cfs

* See Appendix D-1

SECTION 2 - ENGINEERING DATA

2.1 Design. There are no records of the original design available.

2.2 Construction. With the exception of the physical features that have been measured and included as Appendix B of this report, plus the owner's recollection of riprap being added to the downstream side in 1924, there is no construction data available. The Manchester Water Department hired a consultant to inspect and make recommendations for repairs and modifications to the dam. This report is included herein as Appendix A.

2.3 Operation. Manual operation of a 6 inch gate valve on the downstream end of the 6 inch conduit under the center of the dam.

2.4 Evaluation.

a. Availability. Not enough information available.

b. Adequacy. The lack of indepth engineering data did not allow for a definitive review. Therefore the adequacy of this dam could not be assessed from the standpoint of reviewing design and construction data, but is based primarily on visual inspection, past performance history and sound engineering judgement.

c. Validity. Based on visual field observations, there is no reason to question the validity of the design, and construction and operation records.

SECTION 3

VISUAL INSPECTION

3.1 Findings.

a. General. At the time of this inspection the water surface was about 1.5 feet from the top of the dam with the concrete spillway at its easterly end discharging approximately 10 cfs. The 6 inch conduit under the dam was discharging water into Lydall Brook on the downstream side. There was no snow cover on the ground and no evidence of boils or seepage emerging in the vicinity of the downstream toe.

b. Dam. The rock-fill on the downstream side at the masonry wall was moss covered with no evidence of displacement. Overall the rock-fill starts about 2.5 feet below the top of the masonry wall and slopes on 1 on 1-1/2 to the downstream toe, except at the 6 inch outlet pipe in the old streambed where the rock-fill starts 8 feet below the top of the wall and ends in a nearly vertical face at the outlet end of the pipe. This type of section extends for a length of about 20 feet in the deepest section of the dam and was probably placed in this manner to avoid the necessity of extending the outlet pipe.

Trees along the right downstream toe have recently been cut within a strip about 10 feet wide. This has not been done along the left downstream toe.

The discharge from the spillway meanders as a natural watercourse around trees, boulders and over ledge rock back to the toe of the dam and then downstream. Large cobbles, boulders and ledge outcrop appear to be adequately protecting the downstream toe of dam.

The upstream slope, estimated at between 1 on 2 to 1 on 3 is faced with riprap within the area visible to inspection. Several small areas were noted at the top of the slope where the earth fill has eroded behind the riprap. One of the areas had been filled with crushed stone. The top width of the dam consists of a silty gravelly surface with a sparse growth of grass. The crest of the dam shows no evidence of settlement or misalignment. No surface cracks were noted. The portion of the vertical masonry wall exposed to view showed generally rectangular shaped stone chinked with rock spalls. The wall is dry wall construction with no mortared joints exposed. The cap stones are cut granite blocks as large as 2 x 3 x 6 feet in dimension. There is no evidence of displacement of the masonry wall.

Visual observation of rock outcrop downstream of the dam on the left valley wall and the evidence of the spillway discharge channel flowing over shallow bedrock indicates a shallow bedrock foundation for

the left half of the dam. There is no evidence of shallow rock to the right of the brook and the right half of the dam probably has a soil foundation. The masonry wall probably extends to bedrock in the left half of the dam and probably not in the right half. Horses and cattle have access to the top of the dam from the right abutment area.

c. Spillway. The spillway in combination with a low saddle at the eastern end of the dam can discharge about 540 cfs or 44% of test flood outflow before the dam would be overtopped. It consists of a broad crested, concrete weir with a trapazoidal section. (See sheet 1, Appendix A). The concrete appears in good condition with no evidence of cracks and only minor spalling or deterioration. The unusually good condition of the concrete is an indication that the spillway is of more recent vintage than the remainder of the dam. There is no spillway approach channel. However, the downstream spillway channel takes a meandering aatural water course around ledge outcropping and boulders back to the toe of the dam and into the original channel.

The pertinent elevations at the dam were taken from a USGS map. The water surface was given as 448 feet msl. This report assumes the pool surface to be at spillway crest at this elevation. The crest of the dam is approximately two feet higher by field measurement. Borings taken around the spillway in 1972 for the Henry Souther Report (Appendix A) show overburden to be shallow in the area. The soil was described as silty gravel.

d. Reservoir Area. The reservoir area appeared clear and free of any floating debris that could cause an obstruction to the spillway.

e. Downstream Channel. The channel drops 90 feet in 2,500 feet or about a 3-1/2 percent channel slope. Five hundred feet downstream of the dam is a road with a 6-foot diameter culvert. Approximately 2,000 feet further downstream are two small retention reservoirs. Both the reservoirs would probably hold less than 40 percent of the Risley Reservoir storage. In the event of a failure at Risley Dam, the ensuing wave might rupture the dams containing these two pools with a consequent pyramiding effect that would send a surge of water through part of a new condominium development located 500 feet downstream. Endangered units are estimated to be less than 20.

3.2 Evaluation. The dam appears to be in generally good condition. There are some areas, however, where it is felt remedial measures are required. (See Section 7)

SECTION 4

OPERATIONAL PROCEDURES

4.1 Procedures. The only operational procedure connected with this dam is the regulation of flow through a 6" pipe under the structure with a 6" gate valve located in the vicinity of the downstream toe. The valve is operated by the Manchester Water Department to control flow to two small downstream ponds where the intake works for the water system are located.

4.2 Maintenance of Dam. Maintenance work on the dam consists of some clearing and grass cutting. The Water Resources Commission of the State of Connecticut wrote to Mr. Risley in 1969 requesting him to perform the maintenance work and hire a registered engineer to make recommendations for safety modifications and repairs. Mr. Risley, who apparently is interested in selling the dam, has not complied with the State's request.

4.3 Maintenance of Operating Facilities. The Manchester Water Department provides occasional lubrication for the 6" gate valve. They hired the Henry Souther Engineering Company to submit a report on maintenance and repair requirements in 1971. The report is included herein as Appendix B. The town of Manchester is interested in acquiring the property, but there is some reluctance because of legal ramifications.

4.4 Description of any Warning Systems. There are no warning systems at the site.

4.5 Evaluation. Maintenance and operational procedures are minimal due to the basic simplicity of the structure.

Part of the clearing operation along the downstream side should be continued to avoid having the roots of trees affect the stability of the toe. Clearing in the vicinity of the spillway should be initiated to avoid debris buildup.

SECTION 5

HYDRAULIC AND HYDROLOGIC EVALUATION OF FEATURES

5.1 Evaluation of Features.

a. Design Data. There is no design data or criteria available for the hydraulic features of this dam.

b. Experience Data. The maximum spillway overflow at the dam could have occurred in September 1938 when over 16 inches of rain fell in the area over a period of four days with 8 inches in one day. In August 1955, 7 inches of rain fell in one day during hurricane "Diane."

c. Visual Observations. The hydraulics of the spillway and channel indicate they are inadequate in size and condition. The channel meanders as a natural water course around trees, boulders and over ledge rock back to the toe of the dam. The trees immediately downstream of the spillway could obstruct high flows if they are left in place.

d. Overtopping Potential. Based on U. S. Geological Survey Water Supply Paper 1887 "Maximum Floodflows in the Conterminous United States," the Probable Maximum Flood for the inflow to Risley Reservoir is about 2,800 cfs per square mile. The spillway cannot discharge more than 540 cfs or about 610 cfs per square mile (csm) without overtopping the dam. This is 22 percent of the P.M.F. The surcharge storage will have a negligable effect on spillway outflow.

Since the size classification of Risley Dam is low with a high hazard potential classification, one half the P.M.F. was selected as the spillway Design Flood, that is 1,400 csm or 1,250 cfs.

This would result in overtopping the dam by about 0.6 feet; a full P.M.F. would overtop it by about 1.1 feet.

e. Dam Failure Analysis. A cursory analysis was made to assess the downstream impact of a sudden dam failure. With the reservoir level at top of dam elevation 450 feet msl, the spillway capacity would be 540 cfs or about 22 percent of the Probable Maximum Flood discharge. Assuming the dam failed at this level, producing a breach width of 40 percent of the effective dam length at mid height and a breach depth of about 26 feet, equal to the difference in elevation between top of dam and tailwater, the peak discharge through the breach is estimated to be 24,000 cfs. This flow plus spillway discharge would total 24,500 cfs and would produce a flood wave in the order of 18 feet for a short distance downstream washing out a 6 foot culvert under Lake St. located 500 feet downstream. The discharge and wave would rapidly dissipate as it passed through two small water supply retention reservoirs located 2,500 feet downstream. The height of water over the two reservoirs should be less than 9 feet, but they would probably fail causing a continuation of a

flood wave for another 1,000 feet to the vicinity of several condominium buildings. One thousand feet downstream of the condominiums, approximately 5 to 10 homes and a church could be impacted by water depths probably not exceeding five feet. Beyond this location flows would discharge into flat areas where the flood wave would be largely dissipated. Based on this assessment the hazard potential, in the event of a dam failure, is considered high according to present guidelines.

SECTION 6

STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability.

a. Visual Observations. Based on the absence of any observed seepage or boils downstream, no detrimental settlement or lateral displacement, and no observed surface cracks, an evaluation of the visual observations indicate the dam is structurally stable at the present time under normal conditions. However, the structure is not considered adequate to handle emergency or abnormal conditions due to the following:

(1) The water surface in the reservoir was within 1.5 feet of the top of the dam at its lowest point, while the depth of flow through the spillway was only 2-1/2 inches, indicating inadequate freeboard under all conditions and the possibility of overtopping during storm conditions.

(2) Facilities for emergency drawdown consist of one 6-inch pipe. This is considered inadequate.

(3) The 6-inch drawdown pipe has no means of emergency closure on the reservoir side in case of a break in the line.

Some conditions exist that could cause progressive weakening of the structure under normal operating conditions. These are listed below:

1. Spillway discharge flow against the toe of the embankment.
2. The configuration of the rock-fill supporting the downstream side of the masonry wall where the dam height is a maximum.
3. Trespassing of horses and cattle on the top of the dam.
4. Growth of brush and root systems near the downstream toe of the dam.

b. Design and Construction Data. There are no design or construction records available. The owner states the rock-fill on the downstream slope was placed in 1924.

c. Operating Records. There are no operating records available.

d. Post Construction Changes. There are no known post construction changes except for the addition of the rock-fill noted above.

e. Seismic Stability. This dam is located in Seismic Zone No. 1 and in accordance with Phase I guidelines does not warrant seismic analysis.

SECTION 7

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment.

a. Condition. Visual observations indicate the dam to be in good condition at the present time under normal conditions. With a flood equal to 1/2 Probable Maximum Flood, the dam would be overtopped about 1/2 foot because of inadequate spillway capacity. If the topsoil surface of the dam were to wash away, any granite blocks that fell would mix with the downstream face riprap causing any further failure to decrease. This would cause only a partial failure not as severe as the downstream hydrograph computations would indicate. (See Hydraulic Computations). Other areas of concern with regard to dam safety include:

(1) Inadequacy of 6-inch conduit for emergency drawdown. It can release about 4 cfs maximum with a full pool. Also, it is always pressurized under the dam with no upstream shut off.

(2) The spillway discharge channel encroaches on the toe of the dam.

(3) The rock-fill on the downstream slope is at a minimum where the dam height is a maximum.

b. Adequacy of Information. The lack of indepth engineering data did not allow for a definitive review. Therefore the adequacy of this dam could not be assessed from the standpoint of reviewing design and construction data, but is based primarily on visual inspection, past performance history and sound engineering judgement.

c. Urgency. The recommendations and remedial measures outlined below should be implemented by the owner within one year after receipt of the Phase I Inspection Report.

d. Need for Additional Investigation. Because of its hazard classification and the lack of pertinent design and construction records, a detailed analysis of the structure should be made. The spillway discharge capacity is considered inadequate. Further hydrologic studies by competent consulting engineers are necessary to determine what alternative measures are necessary to significantly increase the discharge capabilities at the dam.

7.2 Recommendations.

a. If the dam is to remain essentially as it now stands, stability investigations should be started in the near future. Some of the following recommendations however, should be investigated by a qualified engineer.

(1) Lower the existing spillway and its length to enable the spillway to pass the selected design flood (½ PMF).

(2) Raise the crest of the dam 2 feet and double the length of the spillway. This recommendation was made by the Henry Souther Engineering Company in their report to the Connecticut Water Resources Commission in 1971. (See Appendix A).

7.3 Remedial Measures.

a. Alternatives.

(1) The spillway discharge channel should be diverted away from the downstream toe. Trees should be cleared along the new route.

(2) Eliminate the dam and have the Manchester Water Department control their water supply with modifications to their downstream pools and water works.

b. Operational and Maintenance Procedures. With most of the above alternatives, the only operational procedure will involve the regulation of a valve on the drawdown conduit. Brush should be cleared in the vicinity of the structure. Debris buildup in the vicinity of the spillway should be removed. Round the clock surveillance should be provided by the owner during periods of unusually heavy precipitation. The owner should develop a formal warning system with local officials for alerting downstream residents in case of emergency. Institute a biennial program of periodic technical inspections. Riprap should be added to the center of the downstream slope to compare in section with the rest of the dam. The 6-inch conduit under the dam should be replaced with a new 18" pipe with substantial drawdown capability.

APPENDIX A

CHECKLIST VISUAL INSPECTION

APPENDIX A

CHECK LIST - VISUAL INSPECTION

AREA EVALUATED	CONDITION
DAM EMBANKMENT	
Surface Cracks	None observed
Pavement Condition	See spillway comments
Movement or Settlement of Crest	Minor settlement - see profile
Lateral Movement	None apparent
Vertical Alignment	Satisfactory
Horizontal Alignment	Satisfactory
Trespassing on Slopes	Horses on crest and top of side slopes
Sloughing or Erosion of Slopes or Abutments	None observed
Rock Slope Protection - Riprap Failures	None observed
Unusual Movement or Cracking at or near Toes	None observed
Unusual Embankment or Downstream Seepage	None observed
Piping or Boils	None observed
Foundation Drainage Features	Unknown
Toe Drains	Probably none
Instrumentation System	None

AREA EVALUATED	CONDITION
OUTLET WORKS - CONDUIT	
Excepting the spillway, the only outlet is a 6-inch pipe under the center of the dam with a gate valve located in the vicinity of the downstream toe.	The 6-inch conduit is probable cast iron. Its age and condition are unknown. There is no seepage evident where it emerges from the downstream toe.
OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL	
There is no outlet structure at this site. The outlet channel is Lydall Brook.	Lydall Brook meanders southwesterly towards Manchester, Conn. with little evidence of bank erosion or flow obstruction along its length.
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Floor of Approach Channel	Earth bottom on reservoir
b. Weir	
General Condition of Concrete	Some erosion at crest
Rust or Staining	None
Spalling	Some on spillway
Any Visible Reinforcing	No
Any Seepage or Efflorescence	None observed
Drain Holes	None

AREA EVALUATED	CONDITION
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	Some - Will affect flow condition at spillway with 1/2 PMF flows.
Floor of Channel	Bedrock and overburden
Other Obstructions	None

APPENDIX B

1. Inspection Report May 1969
   by John J. Mozzochi and Associates.

2. Report on Maintenance and Repairs
   by Henry Souther Engineering Co.

3. Plan, profile and partial
   sections of Risley Dam from
   field observations and
   previous reports.

4. Plan and Elevation.

5. Typical Dam Sections.

JOHN J. MOZZOCHI AND ASSOCIATES
CIVIL ENGINEERS

GLASTONBURY, CONN. 06033
817 HEBRON AVENUE
PHONE 633-3401

PROVIDENCE, R. I. 02903
198 DYER STREET
PHONE 421-0420

XXXXXXXXXXXX
ASSOCIATES
JOHN LUCHS, JR.
ECTOR L. GIOVANNINI

Glastonbury
REPLY TO:

May 3, 1969

STATE WATER RESOURCES
COMMISSION
RECEIVED
MAY 5 1969

ANSWERED _____
REFERRED _____
FILED _____

William H. O'Brien, III
Civil Engineer
Water Resources Commission
State Office Building
Hartford, Connecticut 06115

Re: Risley Reservoir Dam
BOLTON
(and Vernon)
Manchester, Conn.
Our File #57-73-67

Dear Mr. O'Brien:

The referenced site was visited on April 13, 1969 and noted several normal maintenance items that should be performed as follows:

1. Remove trees from the channel downstream of the concrete principal spillway.
2. Remove trees from the emergency spillway channel.
3. Remove trees and brush from all portions of the embankment.
4. There is some spalling of the concrete principal spillway to be repaired before further deterioration.
5. Add rip-rap (or stone paving) on the upstream face of dam in limited areas to protect against wave action.
6. Area around gate valve on 6" draw-down pipe through dam should be put in order for accessibility.

The capacity of the spillway was checked as follows:

APP. B(1)

Frequency (years)	Duration (hours)	Rainfall (inches)	Q (cfs)	Water level above spillway (feet)
25	6	4.0	510	1.48
50	6	4.5	740	1.93
100	6	5.1	870	2.10 *
Diane Type	14	8.51	1170	2.78

With approximately two (2) feet from spillway crest to the top of dam, it is evident the dam could be over-topped. Either the dam should be raised a minimum of 2' 0" or additional spillway capacity added. A combination of raising the dam and adding spillway capacity would also do the job.

Very truly yours,

JOHN J. MOZZOCHI AND ASSOCIATES

By _____
John Luchs, Jr. Associate

JL/ed
File

* These figures will be corrected using the correct drainage area = 52 acres

THE HENRY SOUTHER ENGINEERING
HARTFORD, CONN.

REPORT ON
MAINTENANCE AND REPAIRS
RISLEY RESERVOIR DAM AND SPILLWAY
BOLTON, CONNECTICUT

TO

BOARD OF DIRECTORS
MANCHESTER WATER COMPANY

I. Laird Newell

October 26, 1971

TABLE OF CONTENTS

AUTHORIZATION AND OBJECTIVE

This report has been prepared for the Manchester Water Company in accordance with their verbal authorization.

The objective of this report is to outline the work necessary to satisfy the Water Resources Commission requirements for safety of this dam.

RECOMMENDATIONS

The items of maintenance work mentioned in this report should be begun immediately.

The design scheme for increasing the safety of the dam, which includes lengthening the spillway by 30 feet and raising the dam by two feet, should be presented to the State Environmental Protection Agency for their approval prior to final design and construction.

DISCUSSION

On May 15, 1969 the Water Resources Commission sent a letter addressed to Mr. John S. Risley outlining measures to be taken to insure the proper maintenance and safety at the Risley Reservoir. A copy of this letter is included as Appendix 4 of this report.

The six maintenance items listed in this report are:

1. Remove trees from the channel downstream of the concrete principal spillway.
2. Remove trees from the emergency spillway channel.
3. Remove trees and brush from all portions of the embankment.
4. There is some spalling of the concrete principal spillway to be repaired before further deterioration.
5. Add rip-rap (or stone paving) on the upstream face of dam in limited areas to protect against wave action.
6. Area around gate valve on 6" draw-down pipe through dam should be put in order for accessibility.

The areas which required additional rip-rap and tree and brush clearing are shown on Appendix 3.

The concrete repair on the emergency spillway should be undertaken at the same time as the construction of the enlarged spillway. The specification for this work will be included with the specification for the spillway construction.

The area around the 6" gate valve should have improved accessibility for gate valve operation. We recommend a concrete

or cement block platform and steps to allow easier access and manipulation of the 6" valve especially during ice and snow conditions.

The Water Resources Commission letter also mentions that their engineering consultant determined that the available freeboard of the dam during a major storm is not sufficient to allow adequate safety of the dam. The letter also stated that two feet of freeboard under high water conditions should be allowed for a dam of this size.

We have calculated the water shed run-off, reservoir storage and the principal and emergency spillway capacities and concur that an adequate factor of safety does not exist. We have studied various schemes whereby the required freeboard and spillway capacity might be achieved. The scheme chosen includes widening the principal spillway and raising the top of the dam approximately two feet.

A sketch of the proposed spillway is shown in Appendix 1 and a plan and profile of the dam showing the revised grade is shown in Appendix 3. The estimated cost of doing this work, exclusive of the maintenance items is $9,650.00.

DESIGN CRITERIA

The following criteria was used in evaluation of the spillway capacity.

Water Shed Area	579 Ac.
Reservoir Area	12.8 Ac.
Runoff coefficient	0.40
Return Storm	100 year

Rainfall Intensities

Duration (hrs.)	Intensity (in/hr.)
.33	5
.50	4
1.0	2.7
2.0	1.5
6.0	0.68
12.0	0.42
18.0	0.32
24.0	0.27

Time of concentration - 21 minutes

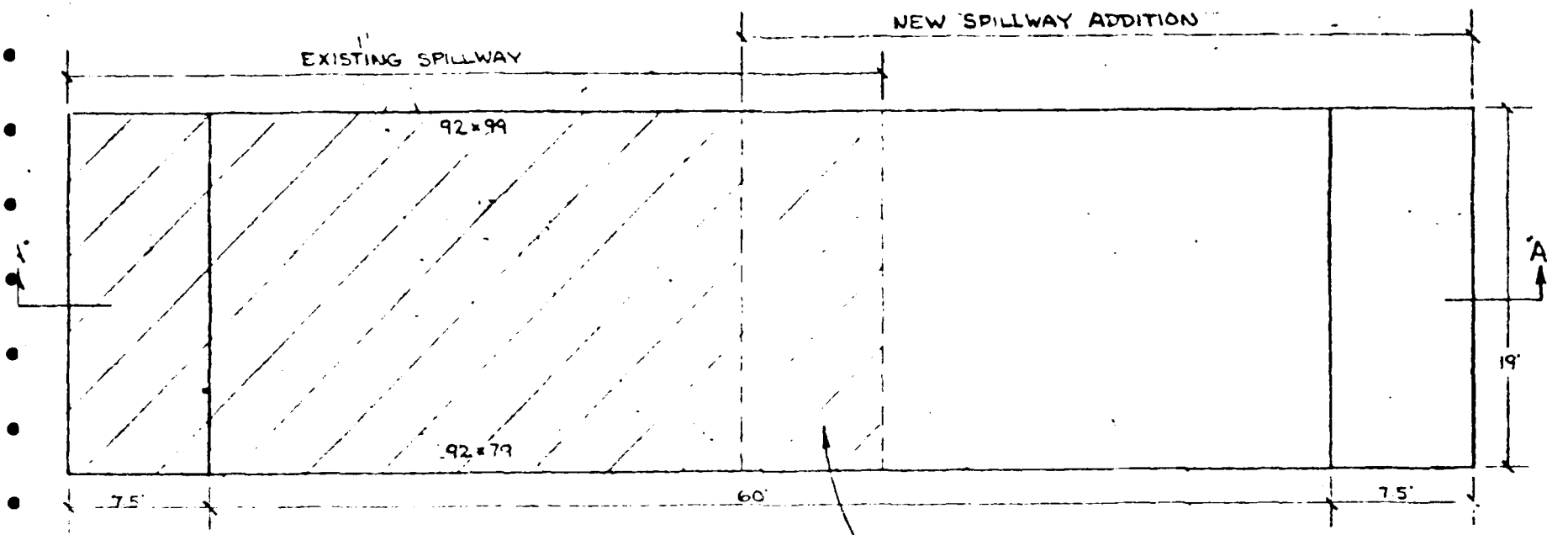
Runoff formula Q=ACI (A = Area in acres (Ac))
(C = Runoff coefficient)
(I = Rainfall intensity in/hr.)

Height of water at beginning of storm at spillway crest.

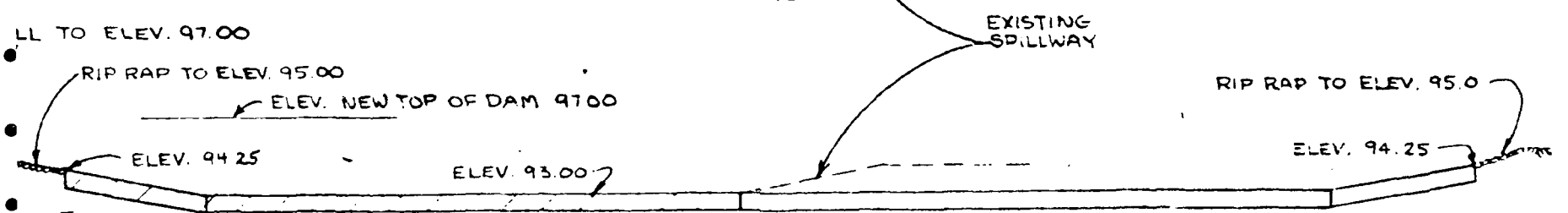
Weir coefficient (C) = 3.0

Weir formula - $Q = CLH^{3/2} + CZH^{5/2}$

The storage and spillway discharge curves for the proposed design are shown in Appendix 2.



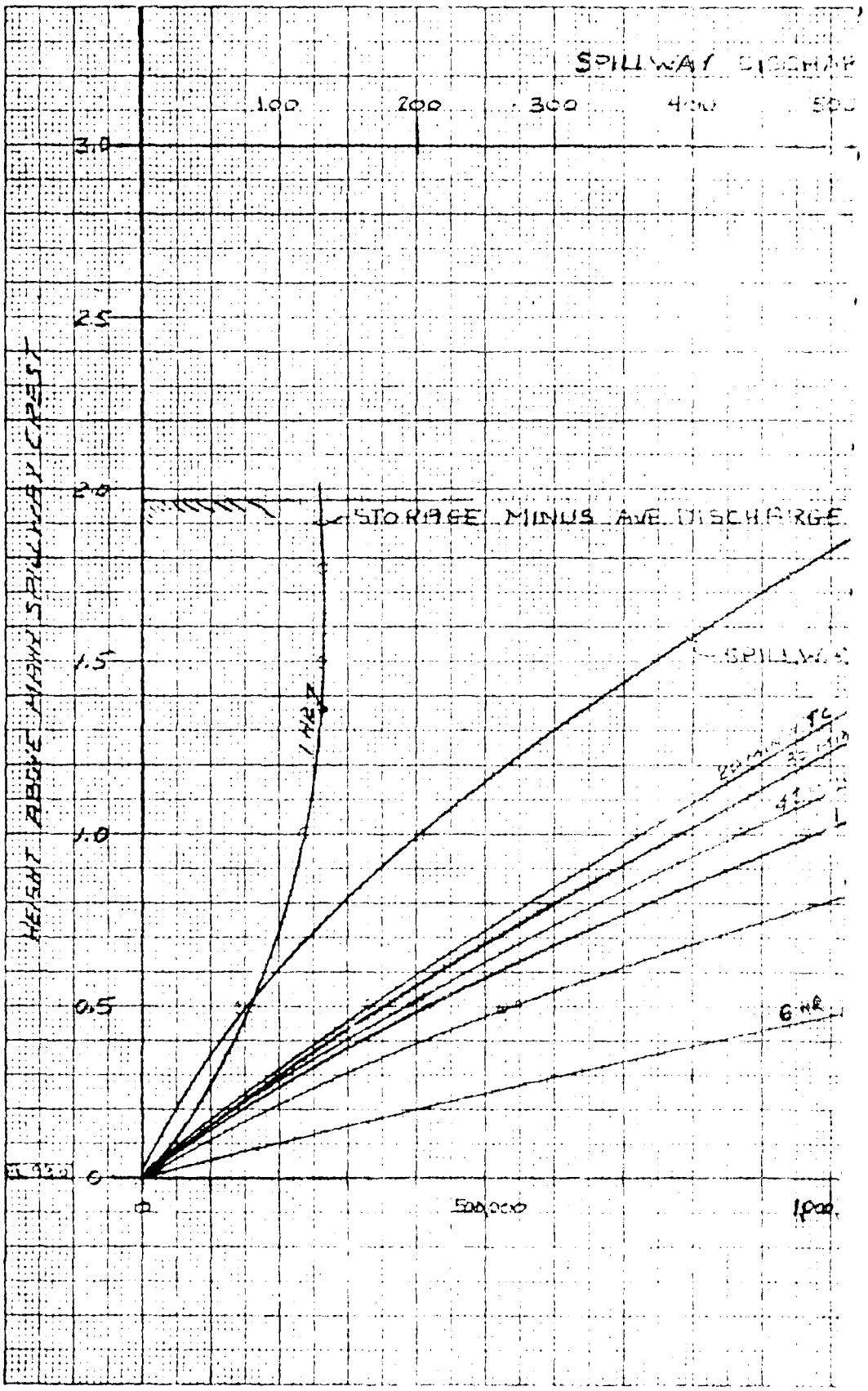
PLAN
SCALE 1/8"=1'-0"

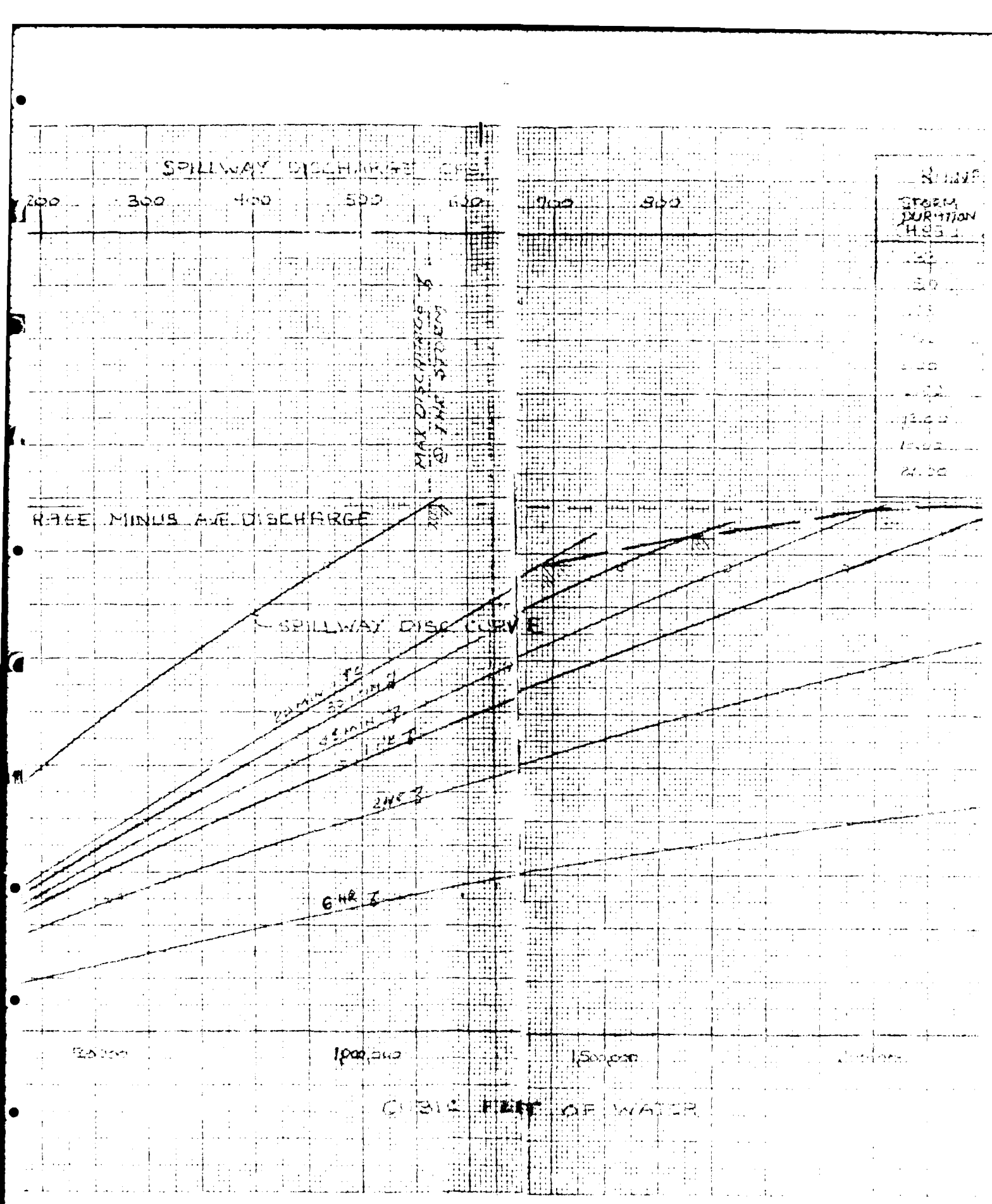


SECTION "A-A"

ELEVATIONS ON AN ASSUMED DATUM.

RISLEY RESERVOI
NEW SPILLWAY SKET
APPENDIX A-1

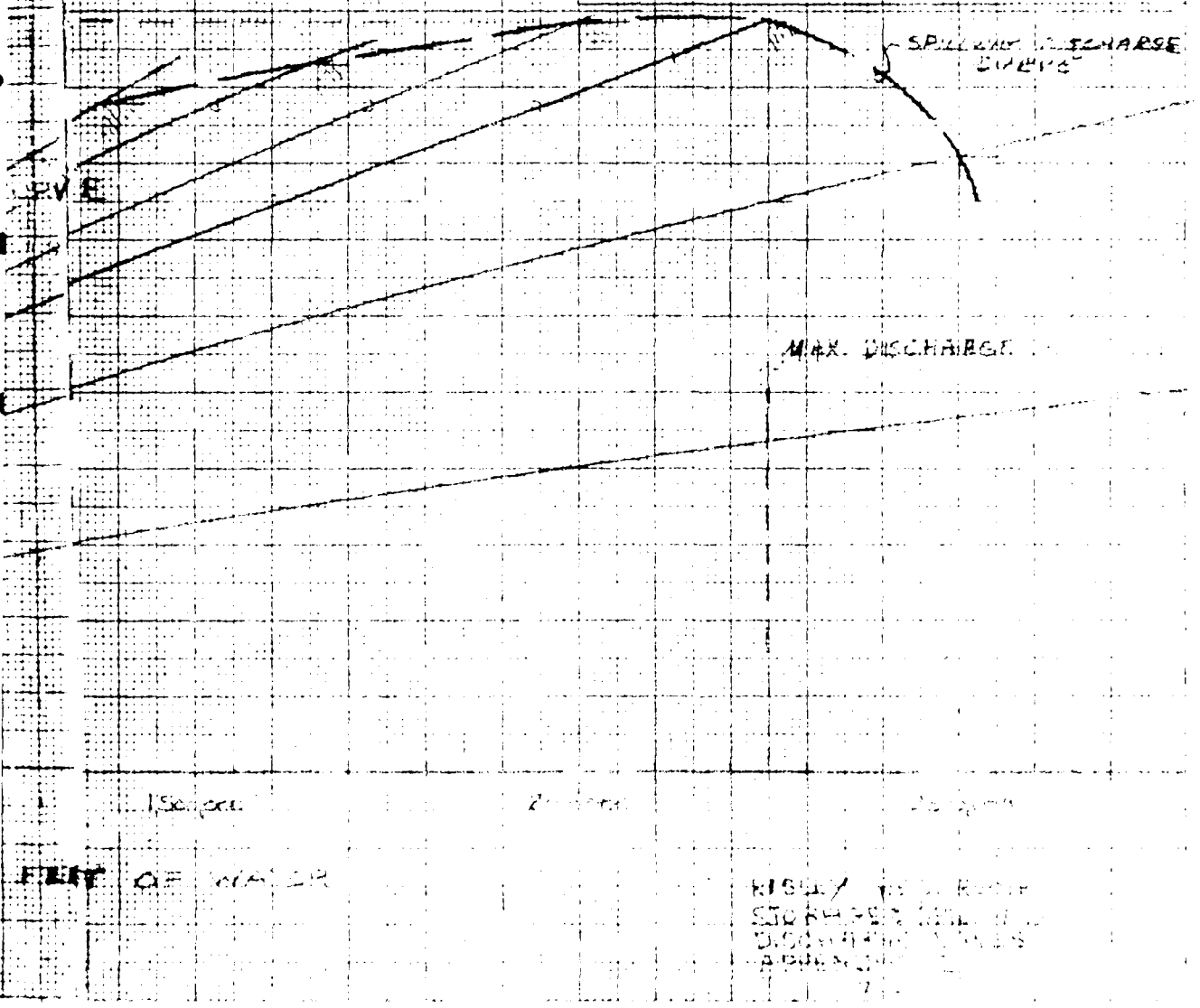




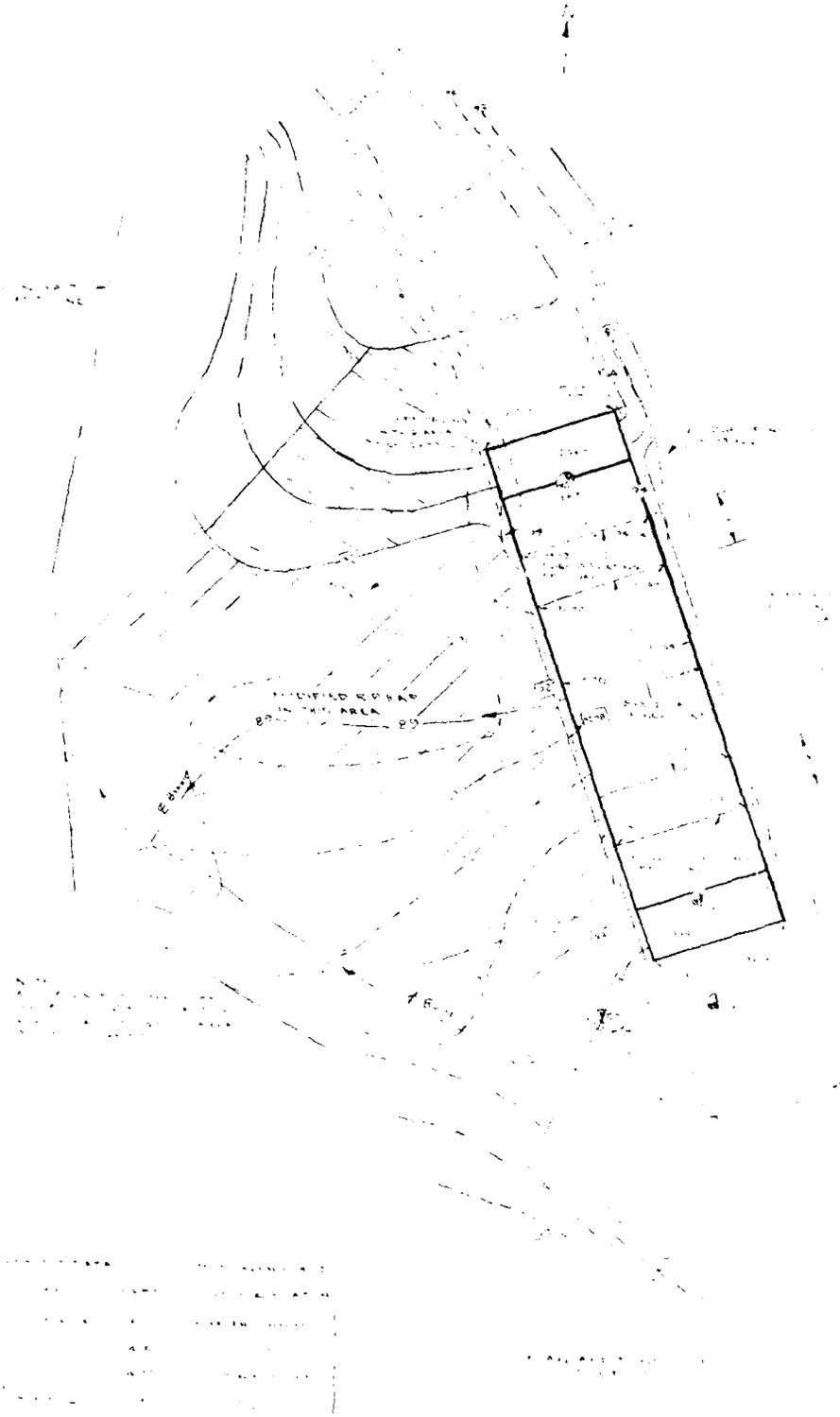
7.00 8.50

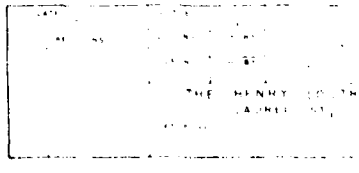
RUNOFF QUANTITY 100 YR STORM

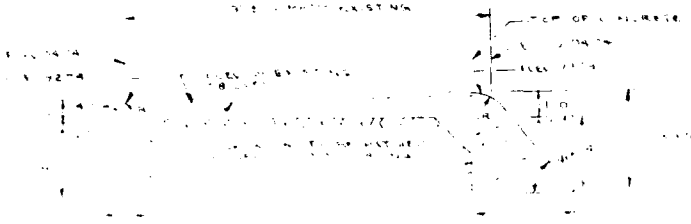
STORM DURATION (HRS)	INTENSITY (IN/HR)	RUNOFF (C.F. WATER)
.33	5	1,380,000
.50	4	[illegible]
.75	[illegible]	[illegible]
1.00	[illegible]	[illegible]
2.00	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
12.00	[illegible]	[illegible]
18.00	[illegible]	[illegible]
24.00	.27	[illegible]

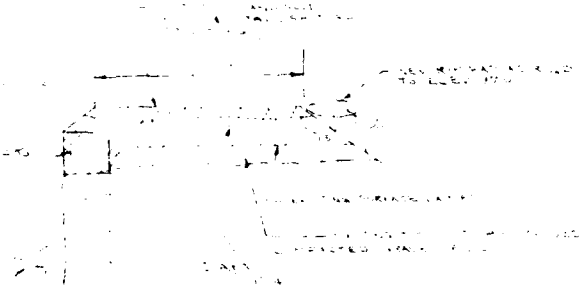


FEET OF WATER PER



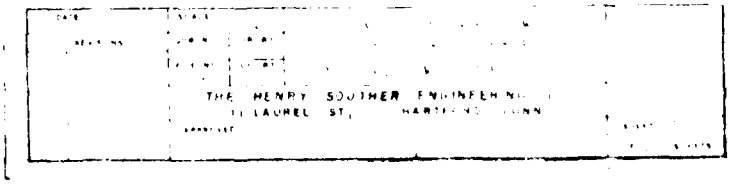




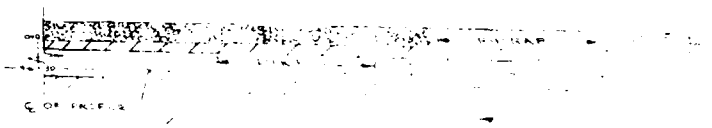


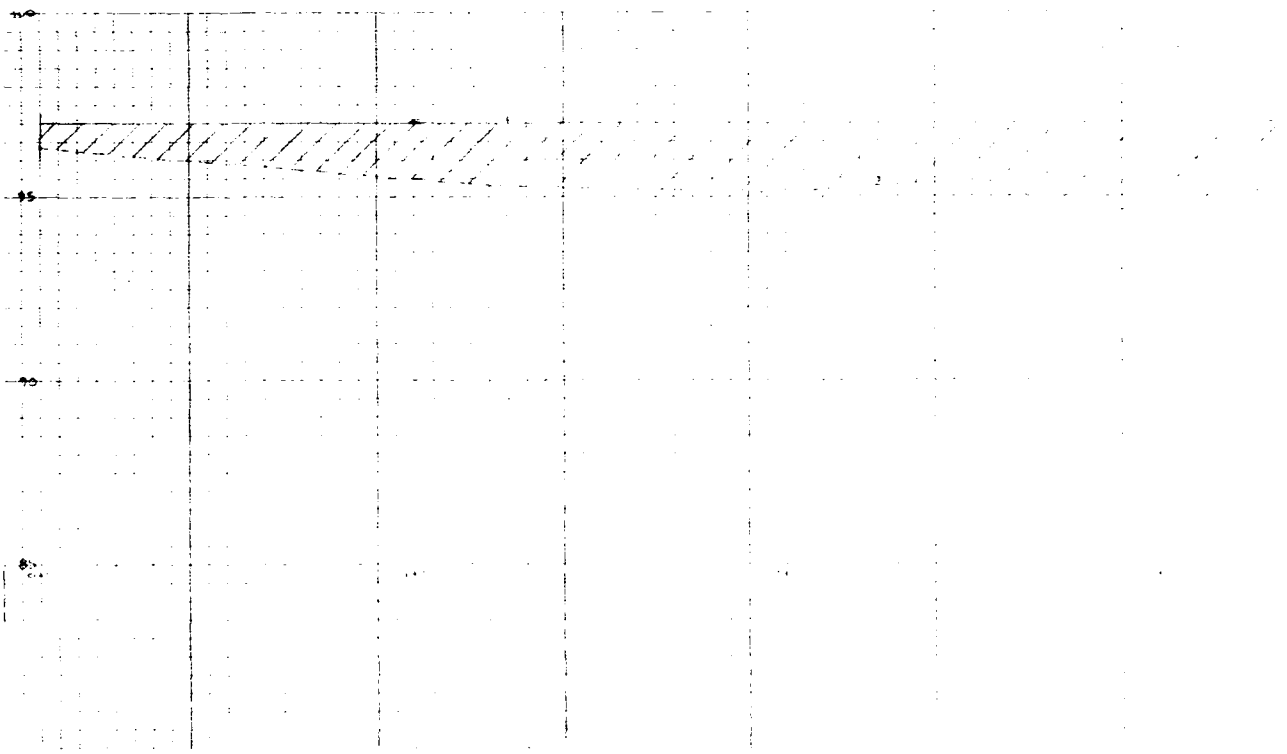
E.C.S.

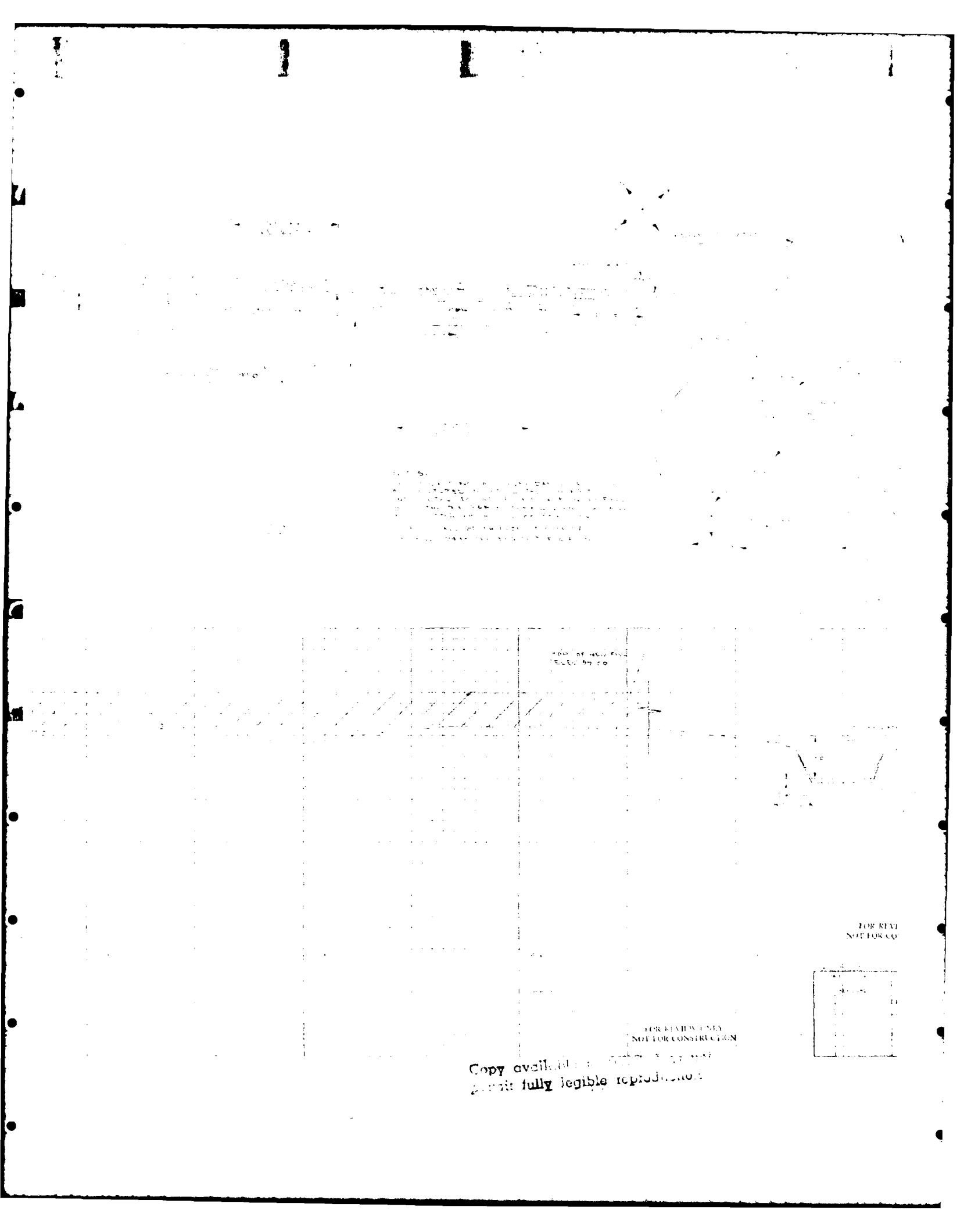
FOR REVIEW ONLY
NOT FOR CONSTRUCTION

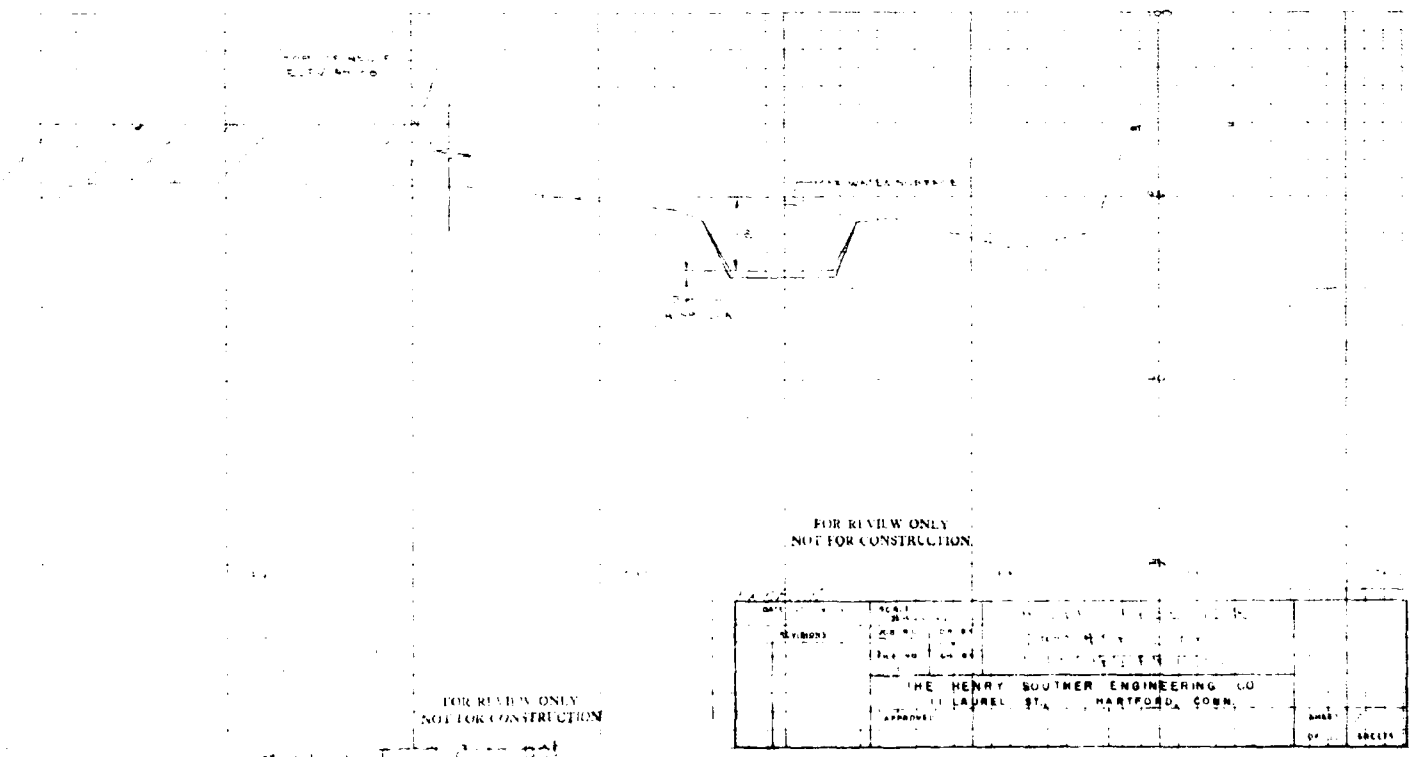


FOR REVIEW ONLY
NOT FOR CONSTRUCTION









FOR REVIEW ONLY
NOT FOR CONSTRUCTION

THE HENRY SOUTMER ENGINEERING CO
LAUREL ST. HARTFORD, CONN.

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

STATE OF CONNECTICUT

WATER RESOURCES COMMISSION

STATE OFFICE BUILDING - HARTFORD, CONNECTICUT, 06115

May 15, 1969

Mr. John S. Risley
Lake Street
RD #3
Vernon, Connecticut

Subject: Risley Reservoir Dam
Bolton, Connecticut

Dear Mr. Risley:

According to the information in this office, the subject dam is, at least in part, under your ownership.

The Water Resources Commission has jurisdiction over all dams " - - which by breaking away or otherwise might endanger life or property - - " per the General Statutes, a copy of which is enclosed. This dam would therefore come under the jurisdiction of the Water Resources Commission.

We have had this dam inspected by an engineering consultant to this Commission who has found the following items in need of maintenance work.

1. Remove trees from the channel downstream of the concrete principal spillway.

2. Remove trees from the emergency spillway channel.

3. Remove trees and brush from all portions of the embankment.

4. There is some spalling of the concrete principal spillway to be repaired before further deterioration.

5. Add rip-rap (or stone paving) on the upstream face of dam in limited areas to protect against wave action.

6. Area around gate valve on 6" draw-down pipe through dam should be put in order for accessibility.

Our consultant also has determined that the water would be within a couple of inches of the top of the dam in a storm of only a 50 year frequency. A dam as large as this one should have much greater capacity with a reasonable freeboard of about 2 feet under high water conditions.

COPY

We request that items 1 through 6 be taken care of at your earliest convenience. A Construction Permit will not be necessary for this work and you may proceed with this without further authorization from this office.

In regard to the inadequate spillway, plans must be submitted for approval prepared by an engineer registered in the State of Connecticut, providing for additional spillway capacity.

May we hear from you at your earliest convenience as to your intentions in providing adequate safety of this dam?

Very truly yours,

William H. O'Brien III
Civil Engineer

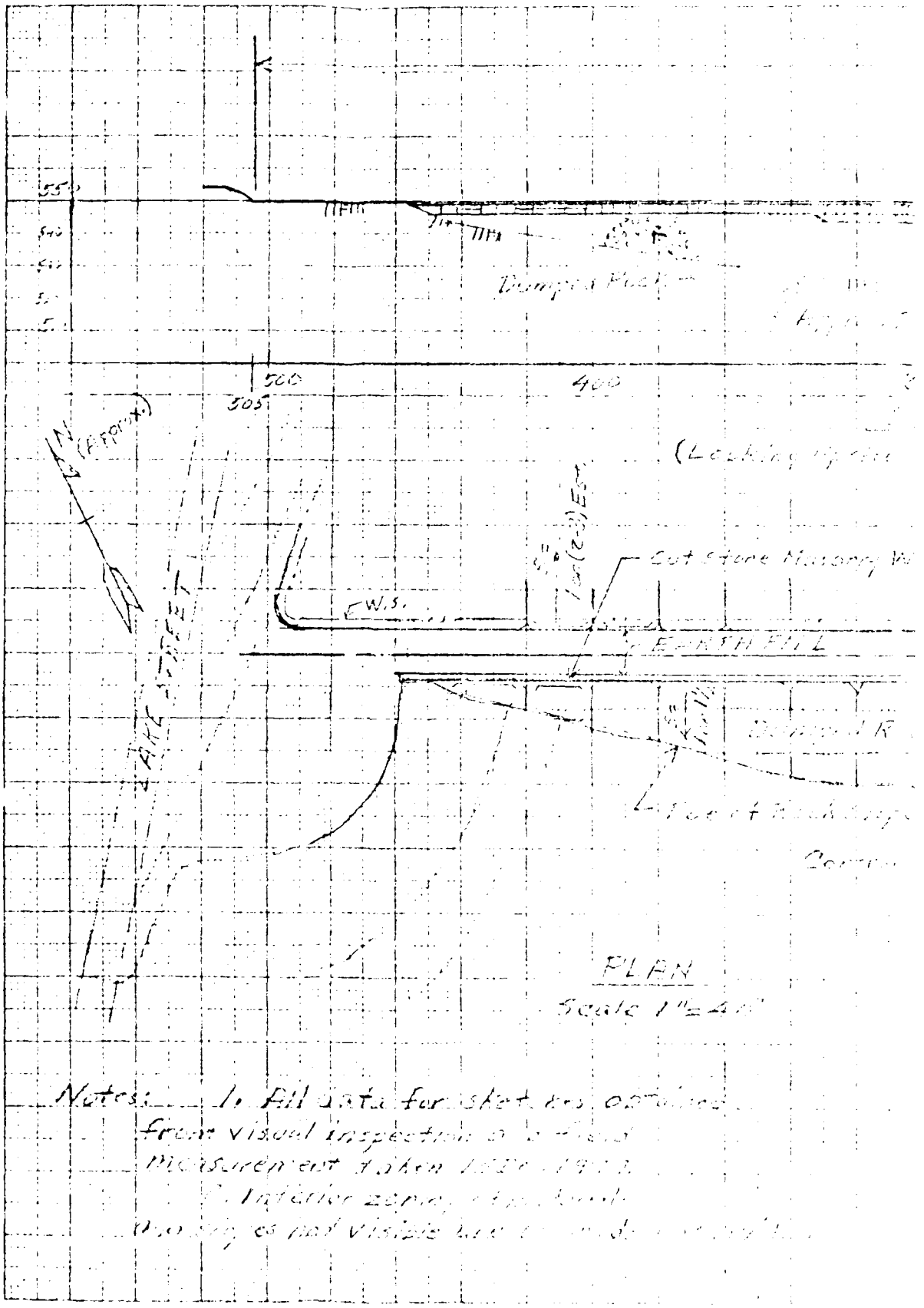
Enc.

WHOIII:vmb

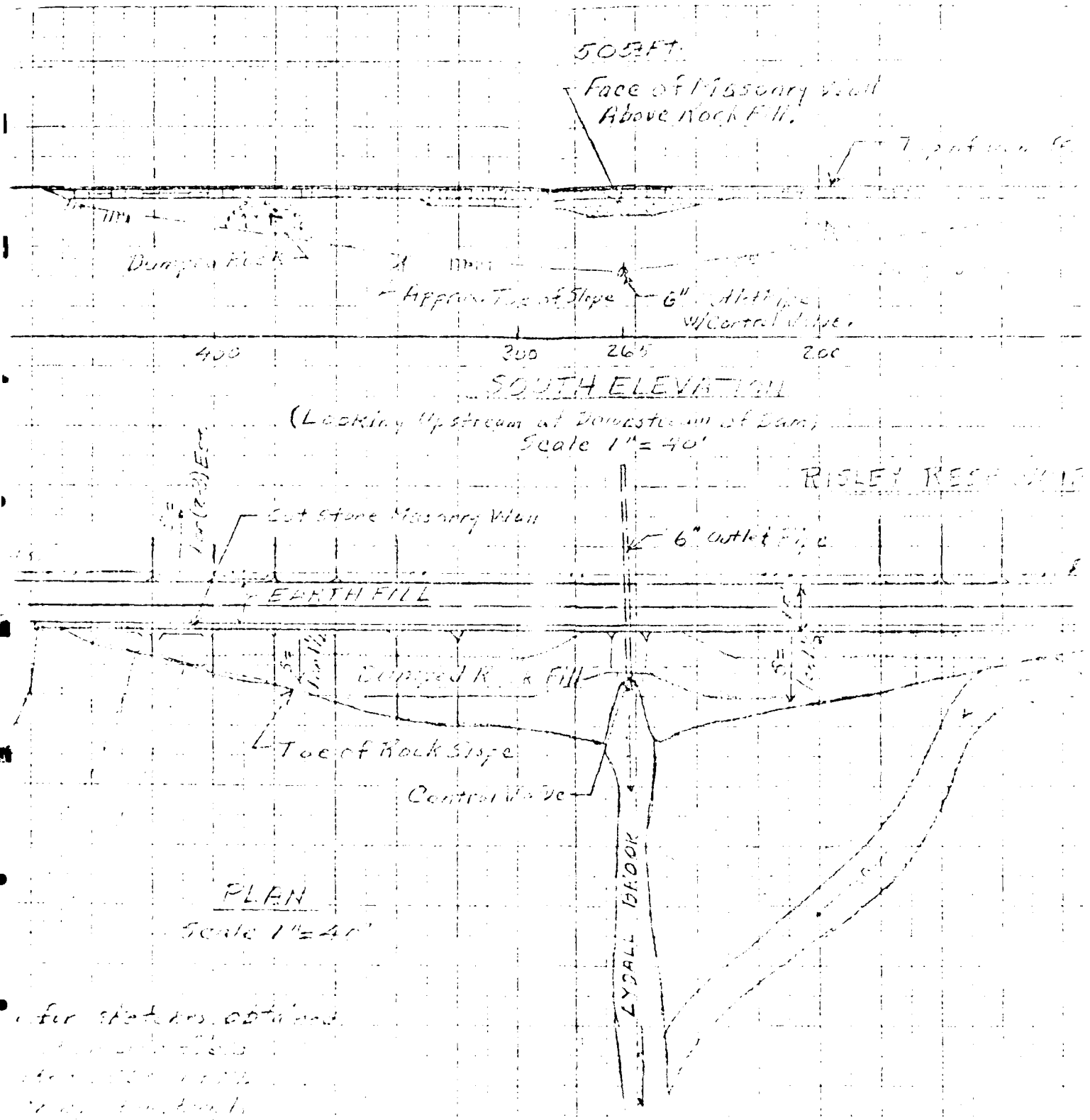
cc: Manchester Water Co.
Hugo Josoloff, Esq.

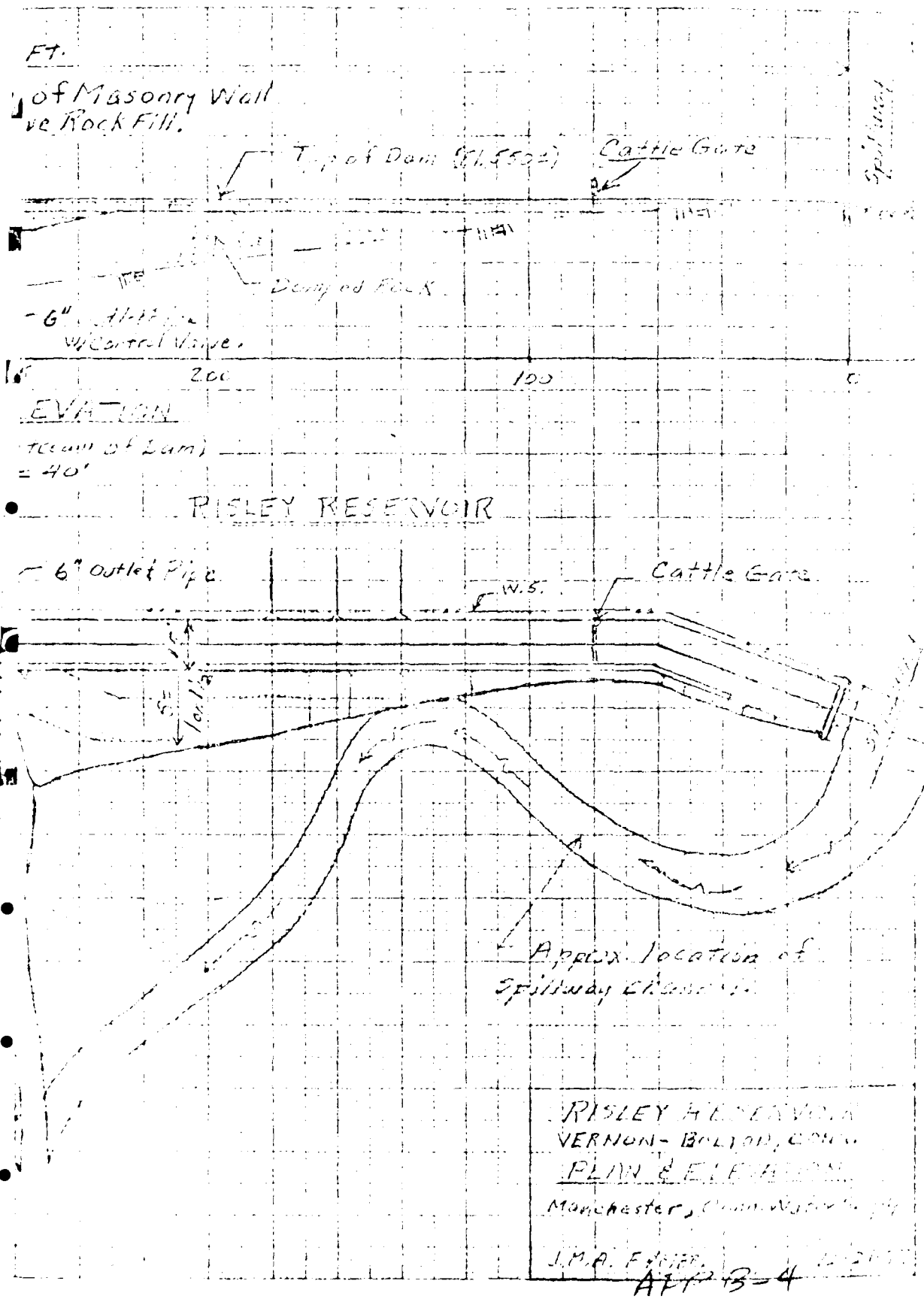
COST ESTIMATE
RISLEY RESERVOIR
SPILLWAY AND FILLING

Item	Quantity	Unit Price	Total
Fill	710 C.Y.	3.50	$3,900.00
Topsoil Removal Replacement and Seeding	850 S.Y.	3.00	2,550.00
Spillway Excavation	L.S.	L.S.	200.00
Concrete	28 C.Y.	90.00	2,500.00
Cleanup and Misc.	L.S.	L.S.	500.00
		Subtotal	7,650.00
		Overhead & Profit	1,910.00
		Total	$9,560.00

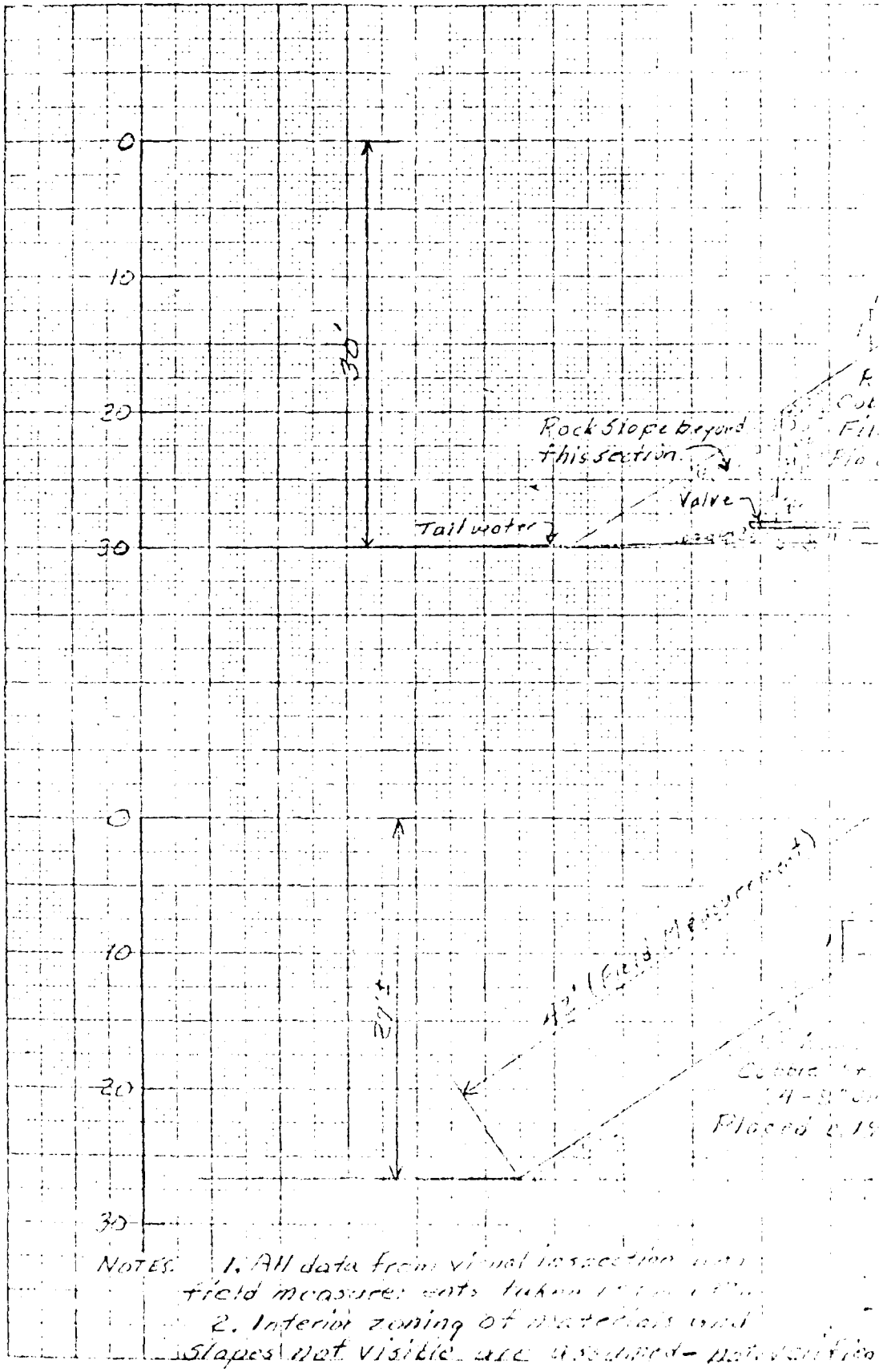


Notes: 1. Fill data for sketch as obtained from visual inspection of [illegible] Measurement taken [illegible] Interior casing [illegible] Pipes not visible [illegible]


505 FT.
Face of Masonry Wall
Above Rock Fill.
Dumped Rock
Approx. Top of Slope
6" Outlet Pipe
w/Control Valve.
400
300
265
200
SOUTH ELEVATION
(Looking Upstream at Downstream of Dam)
Scale 1" = 40'
Cut Stone Masonry Wall
6" outlet Pipe
EARTH FILL
Dumped Rock Fill
Toe of Rock Slope
Control Valve
LYDALL BROOK
PLAN
Scale 1" = 40'

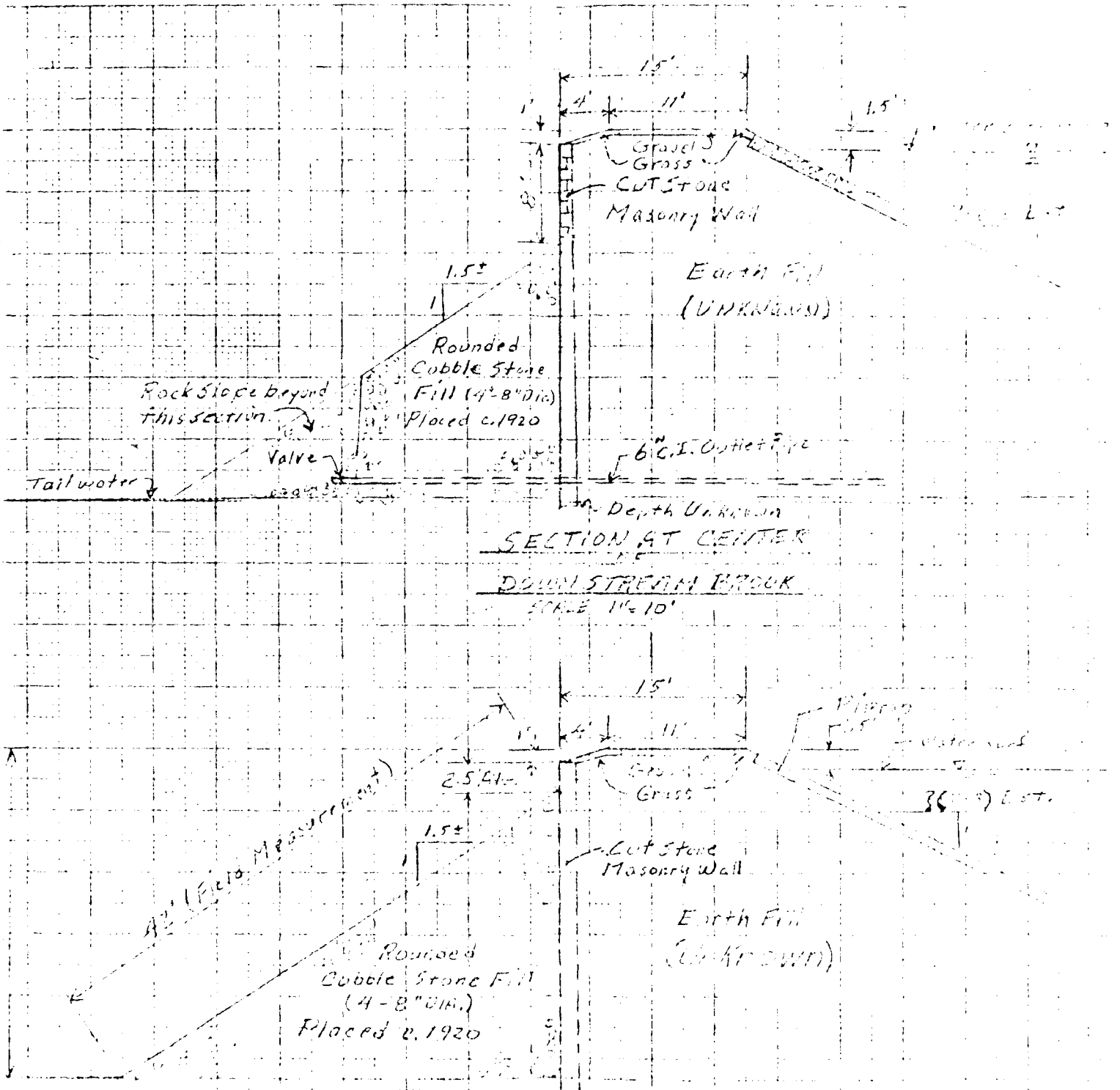

Ft.
of Masonry Wall
ve Rock Fill.
Top of Dam (El. 450±)
Cattle Gate
Spillway
Dumped Rock
6" ... w/Central Vane.
200
100
0
EVATION
Crown of Dam)
= 40'
RISLEY RESERVOIR
6" Outlet Pipe
W.S.
Cattle Gate
Approx. location of
Spillway Channel
RISLEY RESERVOIR
VERNON - BOLTON, CONN.
PLAN & ELEVATION
Manchester, Conn. Water Co.
J.M.A. Fraser.

App. B-4

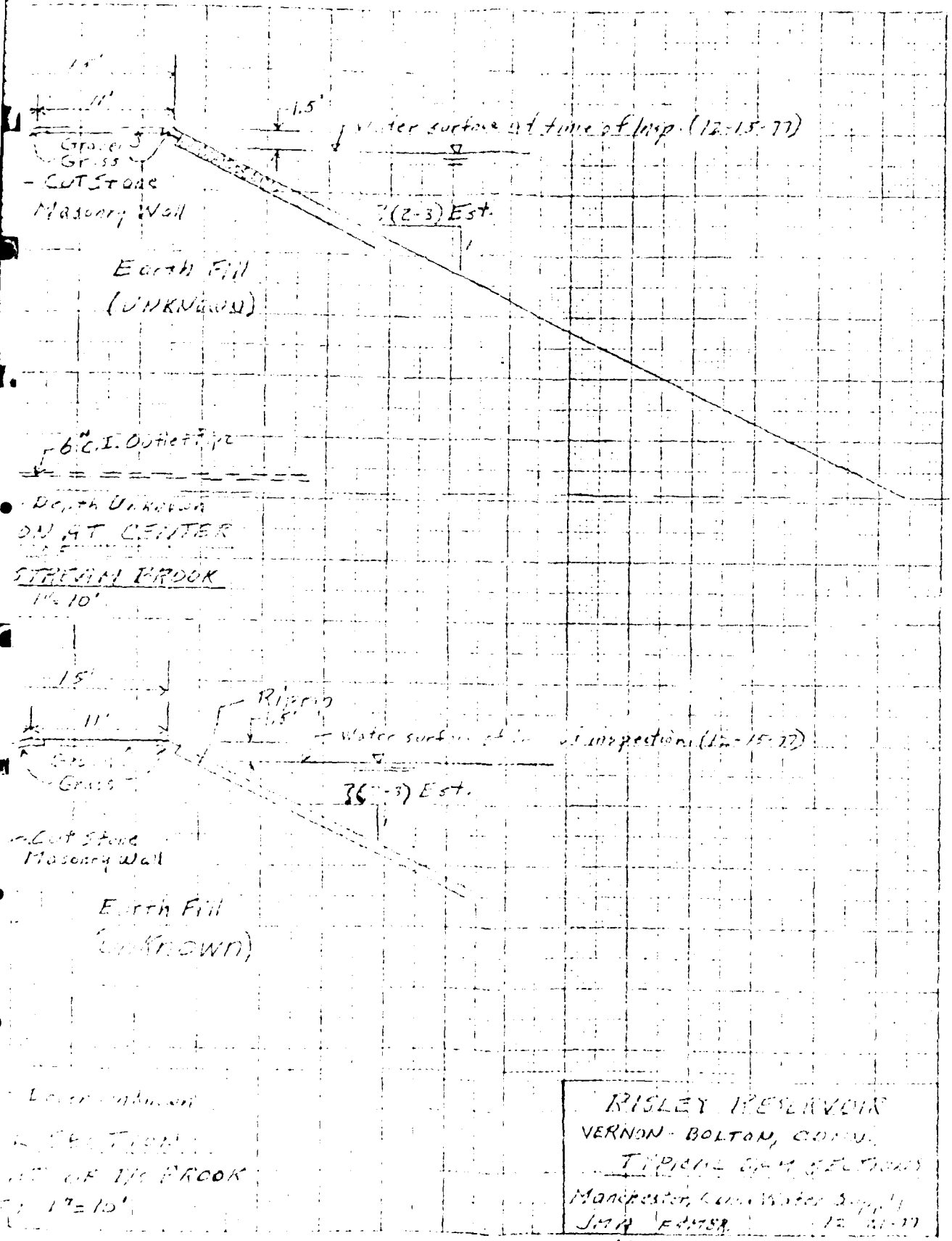


NOTES: 1. All data from visual inspection and field measurements taken [illegible]

2. Interior zoning of materials and slopes not visible are assumed - not verified



...inspection and ... from ... the ... coming of materials used ... are assumed – not verified.

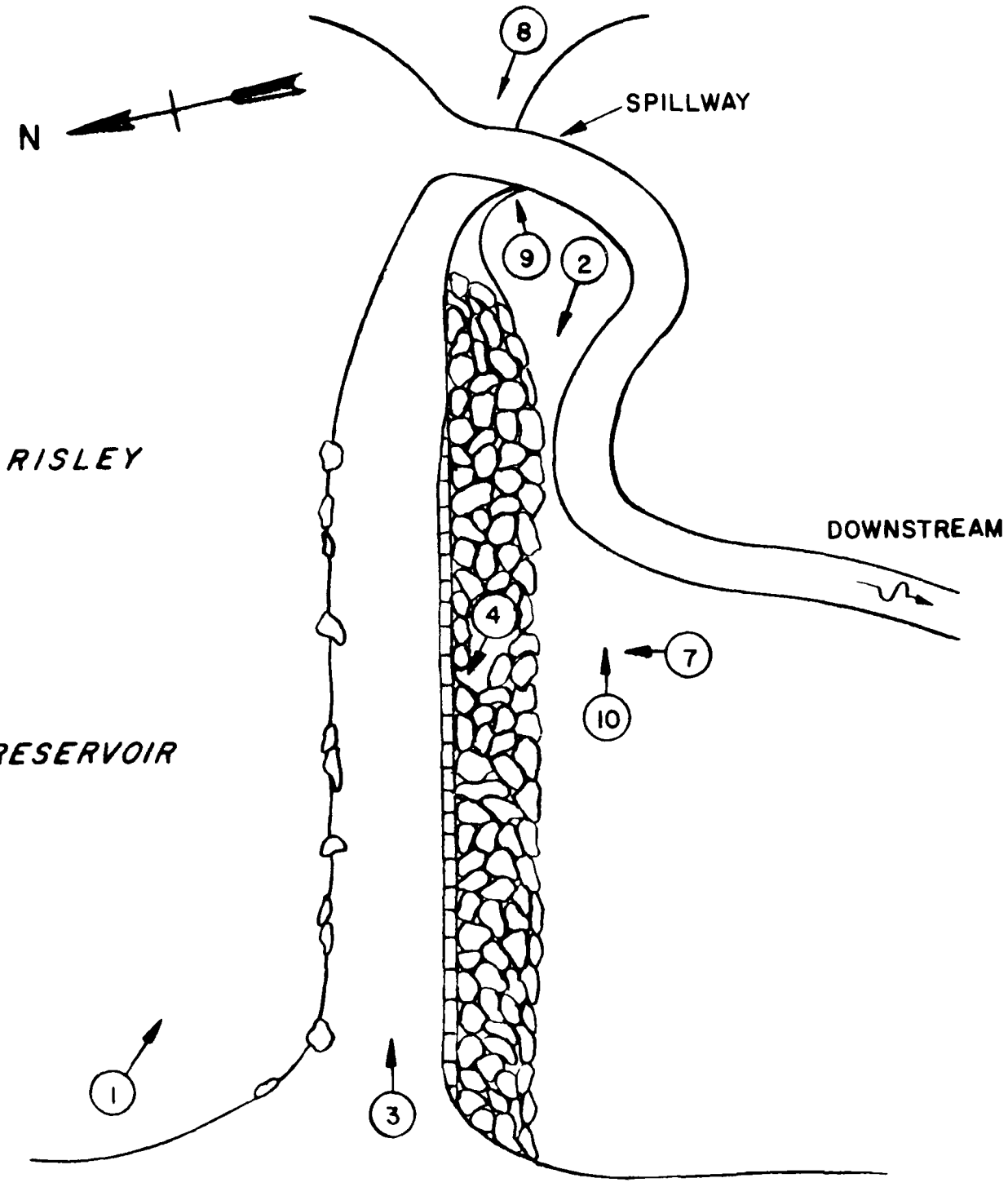


RISLEY RESERVOIR
VERNON - BOLTON, CONN.
TYPICAL CROSS SECTIONS
Manchester Water Supply
JMM FEB '78 12-21-77

AMBS-5 PLATE 4

APPENDIX C

PHOTOGRAPHS



NOTE:
PHOTOGRAPHS NO. 5 & 6 ARE NOT SHOWN ON THIS INDEX

RISLEY RESERVOIR DAM

PHOTOGRAPH INDEX MAP

[illegible] . . NORTHEAST EDGE OF [illegible], LOOKING SOUTHEASTERLY.

[illegible] . . [illegible]

PHOTO 3. VIEW ALONG CENTERLINE OF DAM CREST, LOOKING SOUTHEASTERLY.

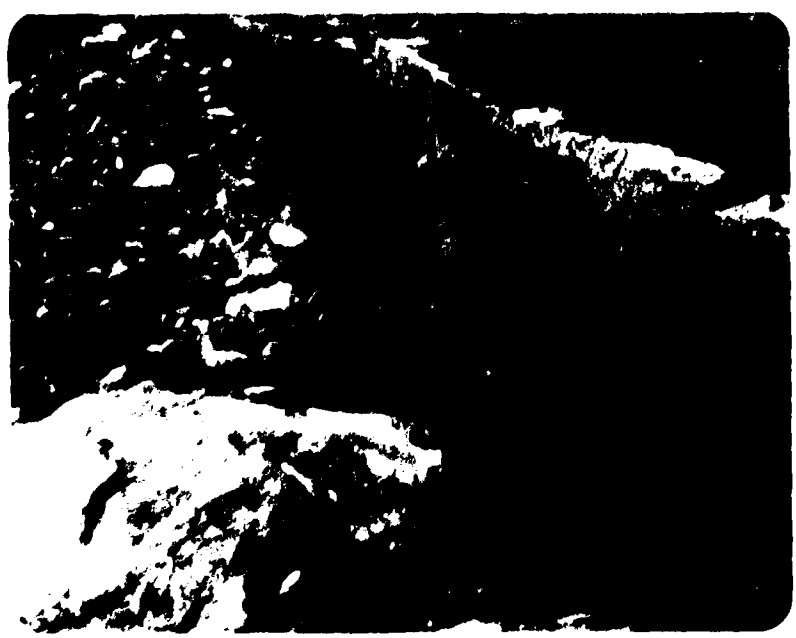


PHOTO 4. VIEW OF DOWNSTREAM FACE OF CREST NEAR THE [illegible] OF THE DAM.

PHOTO 5. SOUTHEASTERLY VIEW ACROSS RESERVOIR.

PHOTO 6. EASTERLY VIEW ACROSS RESERVOIR.

FIG TO 7. LOOKING BACK AT CENTER OF DOWNSTREAM SLOPE.

FIG [illegible]
[illegible]

PHOTO 9. SPILLWAY AND BEGINNING OF DISCHARGE CHANNEL.

PHOTO . SPILLWAY CREST AND LOWER PORTION OF DAM.

APPENDIX D

HYDROLOGIC COMPUTATIONS

1. Stage vs. Discharge Computations.

2. Capacity Curve.

3. Spillway Elevation vs. Discharge Curve.

4. Downstream Dam Failure Hydrographs.

Note: For outline of drainage area and affected areas downstream, see Location Plan on page .

NPD FORM 223
27 Sept 49

CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT

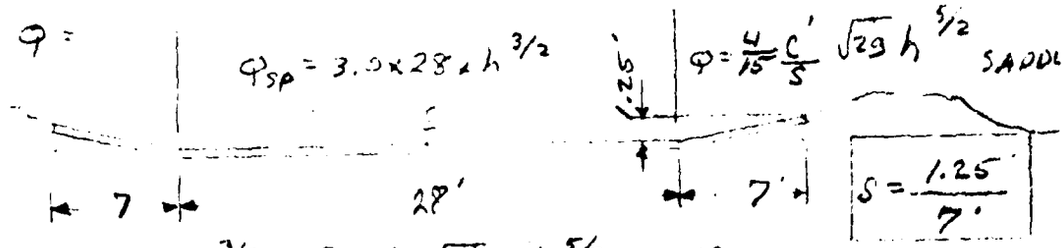
COMPUTATION

COMPUTED BY

CHECKED BY

DATE Dec 27

RISLEY DAM SPILLWAY SECTION
(LOOKING U.S.)



$$Q = 84 h^{3/2} + \frac{8}{15} C' \times \sqrt{2g} \times h^{5/2} + Q_{SADDLE}$$

$C' = ?$

$$Q_{orif.} = \frac{2}{3} C' \ell \sqrt{2g}\, H^{3/2} = Q_{weir} = 3.0 \ell H^{3/2}$$

$$C' = \frac{9}{2\sqrt{2g}}$$

$$Q = 84 h^{3/2} + \frac{8}{15}\left(\frac{9}{2\sqrt{2g}}\right)\sqrt{2g} \times \frac{1}{5} \times h^{5/2} + Q_{SADDLE}$$

$$= 84 h^{3/2} + 2.4/5 \times h^{5/2} + Q_{SADDLE \& DAM}$$

$(+ 13.4\ h^{5/2})$

h	Q_{weir}	Q_{SLOPE}	$Q_{DAM + SADDLE}$	Q_{TOTAL}
1	84	13	0	97
1.5	154	37	85	275
2.0	237	76	228	541
2.5	330	133	540+	960+
3.0	436	208	1550+	2200+

FLOW THRU SADDLE (APPROX.)

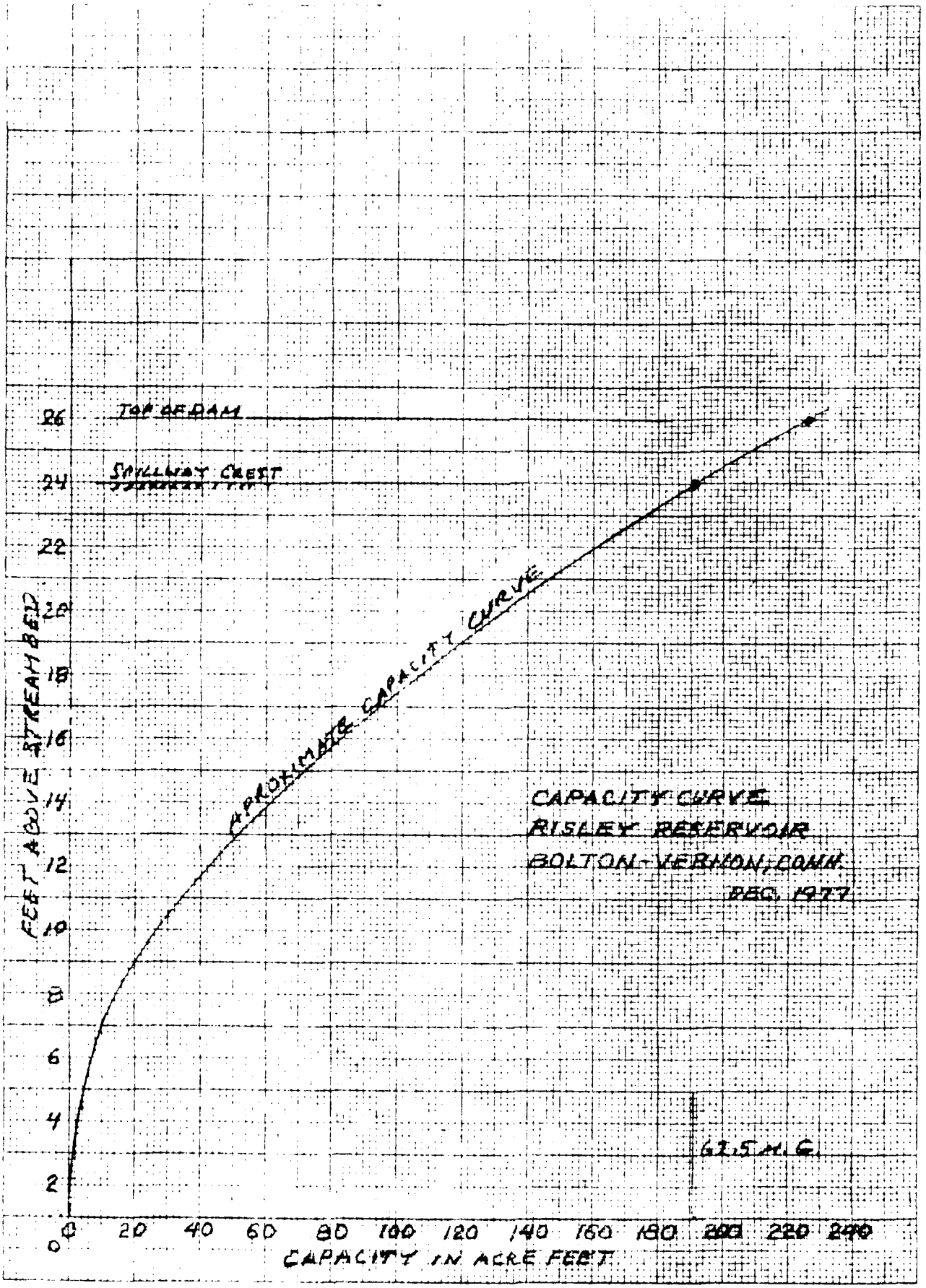
Q_{SADDLE} (1.5') $= 1.2\ (0.9)^{5/2}/5 - 1.2 \times (0.4)^{5/2}/.025 = 84$

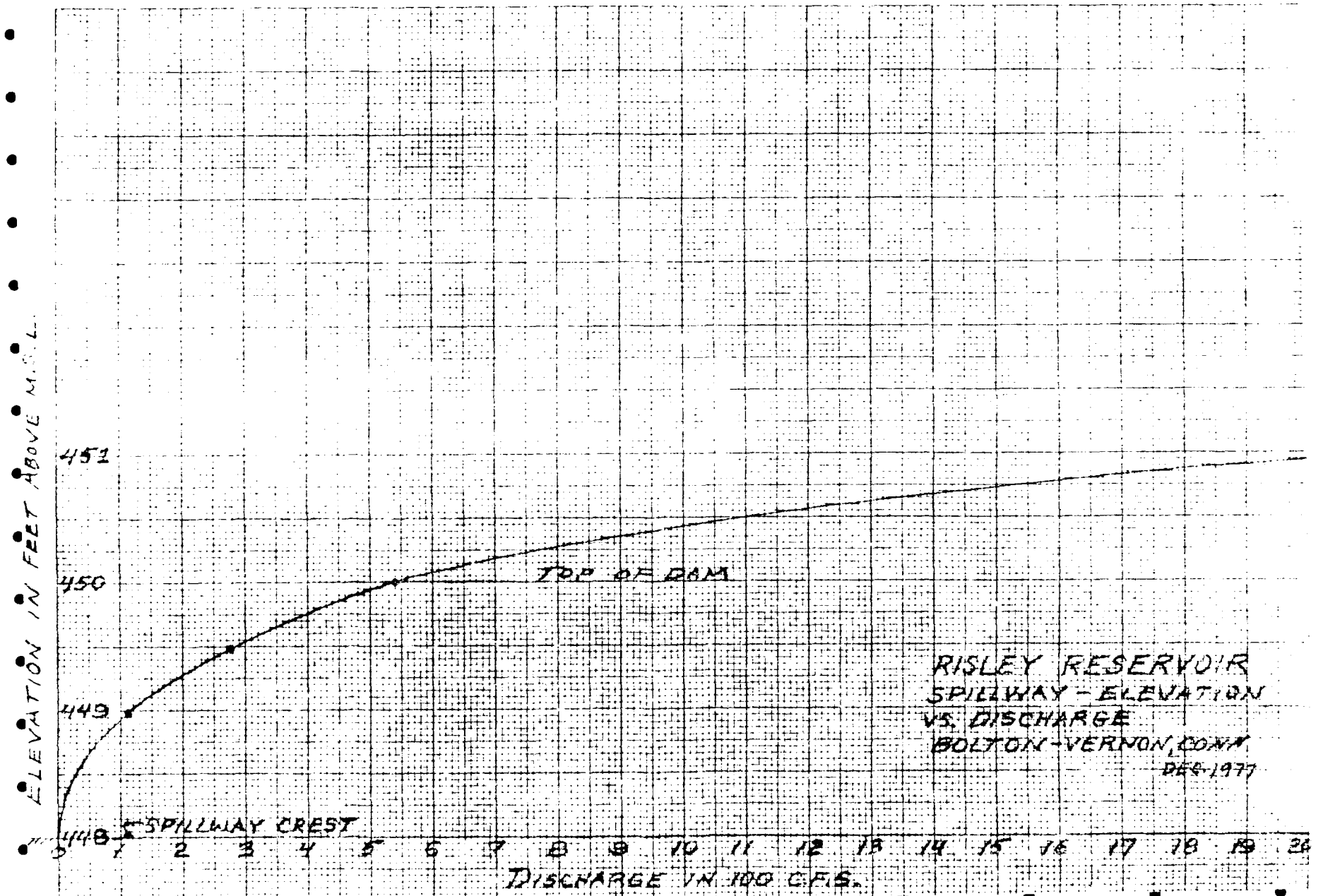
Q_{SADDLE} (2') $= 1.2\ (1.4)^{5/2}/5 - 1.2 \times (0.9)^{5/2}/.025 = 27$

FLOW OVER DAM

$Q = 2.8 \times 28 \times (1.5)^{3/2} = 540$

$Q = 2.8 \times 28 \times (3)^{3/2} = 1550$


TOP OF DAM
SPILLWAY CREST
APPROXIMATE CAPACITY CURVE
FEET ABOVE STREAM BED
0
2
4
6
8
10
12
14
16
18
20
22
24
26
0
20
40
60
80
100
120
140
160
180
200
220
240
CAPACITY IN ACRE FEET
CAPACITY CURVE
RISLEY RESERVOIR
BOLTON-VERNON, CONN.
DEC. 1977
62.5 M. G.


ELEVATION IN FEET ABOVE M.S.L.
451
450
449
448
TOP OF DAM
SPILLWAY CREST
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
DISCHARGE IN 100 C.F.S.
RISLEY RESERVOIR
SPILLWAY - ELEVATION
VS. DISCHARGE
BOLTON-VERNON, CONN.
DEC. 1977

NEW FORM 225
1st Sept 49

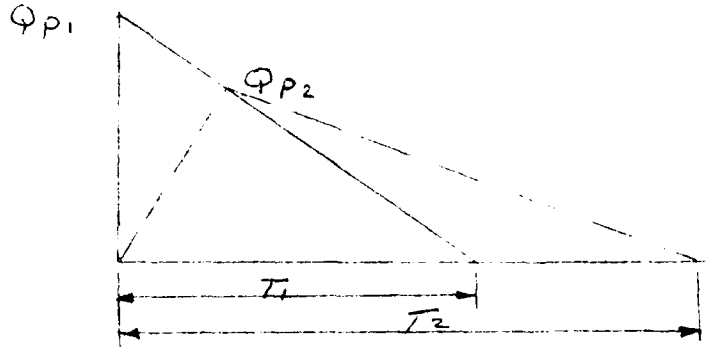
NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE 1/2

SUBJECT RISLEY DAM NR MANCHESTER, CONN

COMPUTATION DOWNSTREAM DAM FAILURE HYDROGRAPHS

COMPUTED BY RWM CHECKED BY DATE 15 JUNE 1978



CHANNEL 0-5000 FT D.S OF DAM

(S) FULL POOL STORAGE AT FAILURE = 230 ± AC-FT

(Yo) HEIGHT FROM RIVER BED TO FULL POOL = 26 FEET

(Wb) Breach Width 40% of Length at mid height
$350' \times 0.4 = 140$ ft.

$$Q_{P_1} = 8/27 \times 140' \sqrt{32.2} \times 26^{3/2} = 31{,}000 \text{ cfs}$$

STAGE = 440' or 20' (See Stage-Discharge Curve)
AREA = 5050 sq. ft. (See Stage-Area Curve)

$$\text{Vol.}_1 = \frac{5050 \times 5000'}{43{,}560 \text{ sf/ac.}} = 58 \text{ AC-FT.}$$

$$Q_{P2}\ (\text{TRIAL}) = Q_{P_1}\left(1 - \frac{V_1}{S}\right)$$

$$= 31{,}000\left(1 - \frac{58}{230}\right) = 31{,}000 - 7800 = 23{,}200 \text{ cfs}$$

STAGE 437.5 or 17.5'
AREA = 4400 sq. ft.

$$\text{Vol.}_2 = \frac{4400 \times 5000'}{43{,}560} = 50.5$$

Vol Ave $(58 + 50.5)/2 = 54.2$ AC-FT.

$$Q_{P_2} = 31{,}000\left(1 - \frac{54.2}{230}\right) = 31{,}000 - 7300 = 23{,}700 \text{ cfs}$$

Stage = 18'

SUBJECT RISLEY DAM NR MANCHESTER, CONN

COMPUTATION DOWNSTREAM DAM FAILURE HYDROGRAPHS

COMPUTED BY RWM CHECKED BY DATE 15 JUNE 1972

CHANNEL 500'-1500 D.S. of Dam

$Q_{p_1} = 23,700$ c.f.s

STAGE = 18.7' (See Stage - Discharge Curve)
AREA = 2620 s.f. (See Stage - Area Curve)

$$Vol_1 = \frac{2620 + 4600}{2} \times \frac{1000 \text{ ft}}{43,560} = 83 \text{ AC-FT}$$

$$Q_{p_2}(TRIAL) = 23,700\left(1 - \frac{83}{230}\right) = 15,150 \text{ c.f.s}$$

Stage = 15.5'
AREA = 1870

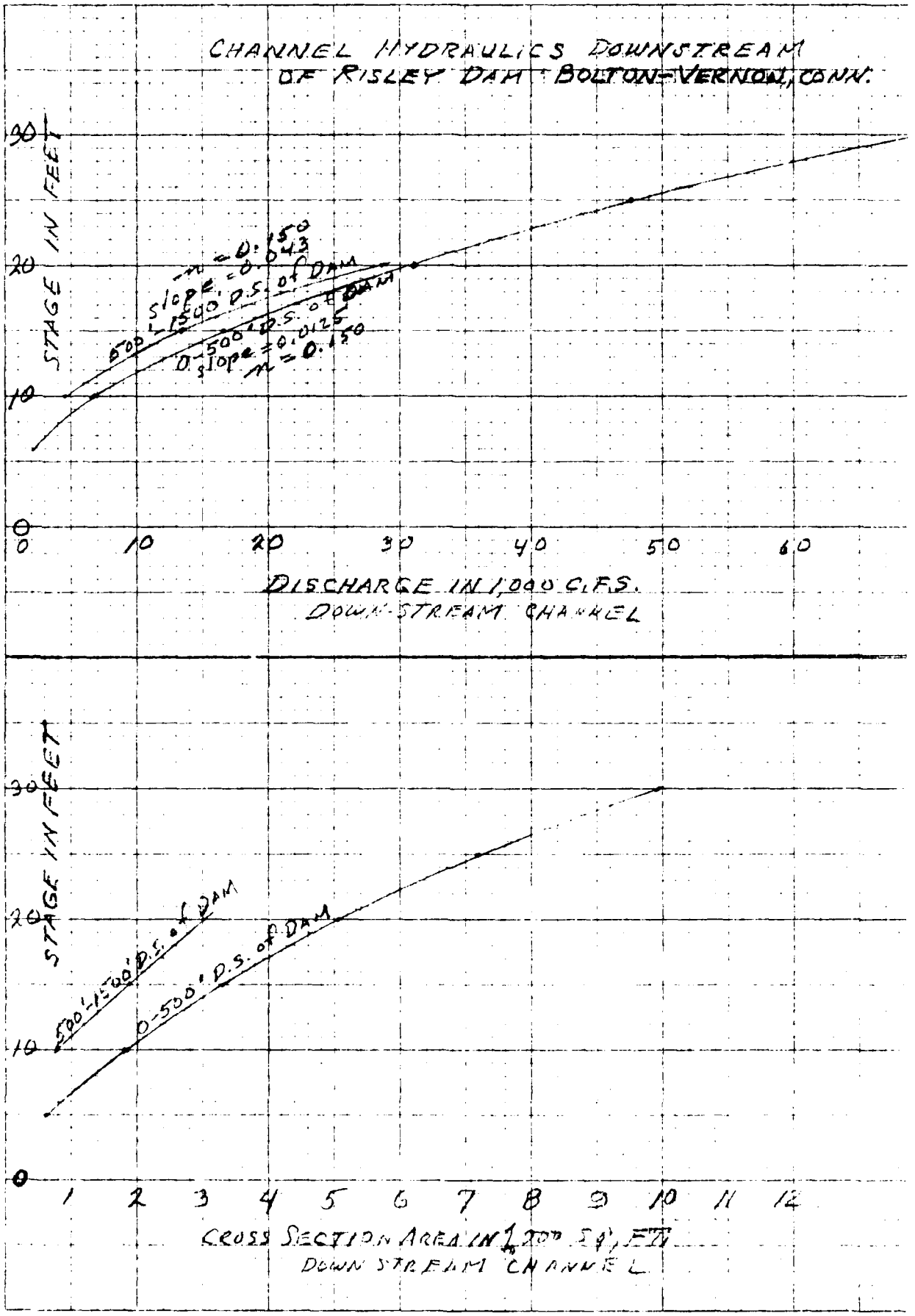
$$Vol_2 = \frac{1870 + 4600}{2} \times \frac{1000}{43560} = 74$$

Vol. AVE = (83+74)/2 = 78.5

$$Q_p(TRIAL) = 23,700\left(1 - \frac{78.5}{230}\right) = 15,600 \text{ c.f.s}$$

stage = 15.5

Note: Q = 15,600 c.f.s would cause 8.5 ft of water to go over small retension dams, if they did not fail otherwise the flood wave rapidly decrease causing extensive inundation in a Suburban area


CHANNEL HYDRAULICS DOWNSTREAM
OF RISLEY DAM - BOLTON-VERNON, CONN.
STAGE IN FEET
30
20
10
0
0
10
20
30
40
50
60
n = 0.150
n = 0.043
Slope = 0.0
500' D.S. of Dam
1500' D.S. of Dam
0-500' D.S. of Dam
Slope = 0.0125
n = 0.150
DISCHARGE IN 1,000 C.F.S.
DOWN-STREAM CHANNEL
STAGE IN FEET
30
20
10
0
500'-1500' D.S. of Dam
0-500' D.S. of Dam
1
2
3
4
5
6
7
8
9
10
11
12
CROSS SECTION AREA IN 1,000 SQ. FT.
DOWN STREAM CHANNEL

46 0780

APPENDIX E

INVENTORY FORMS

PARTS 1 & 2

INVENTORY OF DAMS IN THE UNITED STATES

STATE	IDENTITY NUMBER	DIVISION	STATE COON	LOCAL (DIST.)	FACILITY	CONGR DIST.	NAME	LATITUDE (NORTH)	LONGITUDE (WEST)	REPORT DATE DAY | MO | YR
CT	211	NED	CT	013	0		RISLEY RESERVOIR DAM	4148.0	7228.3	15SEP78

POPULAR NAME	NAME OF IMPOUNDMENT
	RISLEY RESERVOIR

REGION|BASIN	RIVER OR STREAM	NEAREST DOWNSTREAM CITY–TOWN–VILLAGE	DIST FROM DAM (MI.)	POPULATION
01 05	LYDALL BROOK	LYDALLVILLE	1	3500

TYPE OF DAM	YEAR COMPLETED	PURPOSES	STRUCTURAL HEIGHT (FT.)	HYDRAULIC HEIGHT (FT.)	IMPOUNDING CAPACITIES MAXIMUM (ACRE–FT.)	IMPOUNDING CAPACITIES NORMAL (ACRE–FT.)	DIST	OWN	FED R	PRV/FED	SCS A	VER/DATE
RE SRPS	1853	S	26	25	226	190	NED	N	N	N	N	

REMARKS

DS	SPILLWAY TYPE	SPILLWAY WIDTH (FT.)	MAXIMUM DISCHARGE (FT.)	VOLUME OF DAM (CY)	POWER CAPACITY INSTALLED (MW)	POWER CAPACITY PROPOSED (MW)	NAVIGATION LOCKS NO.	LENGTH (FT.)	WIDTH (FT.)	LENGTH (FT.)	WIDTH (FT.)	LENGTH (FT.)	WIDTH (FT.)	LENGTH (FT.)	WIDTH (FT.)
1	SEG	45	540	10000											

OWNER	ENGINEERING BY	CONSTRUCTION BY
JOHN S RISLEY		

REGULATORY AGENCY			
DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE
CONN. WATER COMM.	CONN. WATER COMM.	MANCHESTER WTR. CO	NONE

INSPECTION BY	INSPECTION DATE DAY | MO | YR	AUTHORITY FOR INSPECTION
NED FARRELL	000CT69	PL 92-367

REMARKS

END

FILMED

8-84